

**Rural and Frontier
Emergency Medical Services
Agenda for the Future
Draft 4.0
July 26, 2004**

For Public Comment Until August 15, 2004

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Messages

(To be added in final draft)

1. Director, Office of Rural Health Policy
2. President, National Rural Health Association
3. President, National Association of State EMS Directors
4. President, National Organization of State Offices of Rural Health

The Vision

The rural/frontier emergency medical service system of the future will assure a rapid response with basic and advanced levels of care as appropriate to each emergency; and will serve as a formal community resource for prevention, evaluation, care, triage, referral and advice. Its foundation will be a dynamic mix of volunteer and paid professionals at all levels, as appropriate for and determined by its community.

Executive Summary

The face of rural/frontier emergency medical service (EMS) has changed dramatically since the 1966 National Academy of Sciences, National Research Council (NAS-NRC) white paper “*Accidental Death and Disability: the Neglected Disease of Modern Society*” marked the conception of modern EMS. Ambulance service of that era was more about a fast ride than medical care. It was provided as a low-investment by-product service of funeral homes and others whose primary business already had the requisite type of vehicle. The NAS-NRC white paper revealed the ill-equipped, ill-trained nature of these services, as well as their potential to do more harm than good.

Subsequent reforms led to the birth of modern EMS with the Emergency Medical Services Systems Act of 1973. As standards for training, equipment and care changed, so too did the providers of rural/frontier EMS. Dedicated ambulance vehicles staffed by trained EMTs operated by independent volunteer organizations, volunteer fire departments, local hospitals, and others replaced hearses as many of the previous operators balked at the required investment to meet emerging standards.

In the past three decades, the EMS field, with its capabilities and role as a unique discipline at the crossroads of medicine, public health and public safety, has matured dramatically. At a rural car crash, the gold standard medical response has gone from hearse to helicopter. The pressure to provide advanced life support (ALS), created at first by enthusiastic EMTs within EMS agencies themselves, has become compounded by media-generated public expectation. The drive to

provide ALS has had an effect similar to that experienced by funeral home ambulance operators pressed to provide safe, basic care in the early 1970's.

EMS agencies dependent on volunteers for staffing and fund-raising for revenue, have found advancement difficult. Indeed, it is often a challenge to continue to assure the timely response of a basic life support ambulance in these settings. In the post 9/11 era of preparing public safety for effective response to manage terrorist and other events, the reality of rural/frontier EMS is that the infrastructure upon which to build such a response is itself in jeopardy.

The 1996 NHTSA "*EMS Agenda for the Future*", the visionary guide upon which this document is based, states that "EMS of the future will be community-based health management which is fully integrated with the overall health care system". A theme running through the *Rural/Frontier EMS Agenda for the Future* is that such EMS integration is not only a reasonable approach to making community health care more seamless and to meeting community health care needs that might not otherwise be met, but that providing one type of EMS-based community health service or another may be crucial to the survival and advancement of many rural/frontier EMS agencies.

Another related theme is that EMS should not only weave itself into the local health care system but into the fabric of the community itself. Communities can objectively assess and publicly discuss the level and type of EMS care available, consider other options and accompanying costs, and then select a model to subsidize. Where this happens through a well-orchestrated and timely process of informed self-determination, community EMS can be preserved and advanced levels of care can be attained. This document suggests other means of maintaining an effective EMS presence as well such as alternative methods of delivering advanced life support back-up, and the formation of regional cooperatives for medical oversight, quality improvement, data collection and processing.

The *Rural/Frontier EMS Agenda for the Future* is built on the foundation of the 1996 *EMS Agenda for the Future*. With one minor change, the *Rural/Frontier EMS Agenda for the Future* also proposes continued development of 14 EMS attributes. They are:

- ◆ Integration of Health Services
- ◆ EMS Research
- ◆ Legislation and Regulation
- ◆ System Finance
- ◆ Human Resources
- ◆ Medical oversight

- ◆ Education Systems
- ◆ Public Education
- ◆ Prevention
- ◆ Public Access
- ◆ Communication Systems
- ◆ Clinical Care and Transportation Decisions/Resources
- ◆ Information Systems
- ◆ Evaluation

The rural/frontier emergency medical services system of the future will assure a rapid response with basic and advanced levels of care as appropriate to each emergency; and will serve as a formal community resource for prevention, evaluation, care, triage, referral, and advice. Its foundation will be a dynamic mix of volunteer and paid professionals at all levels, as appropriate for and determined by its community. Fulfilling this vision will require the application of significant federal, state, and local resources as well as committed leadership at all levels to address such issues as:

- ◆ Staff recruitment and retention;
- ◆ The role of the volunteer;
- ◆ Adequate reimbursement and subsidization;
- ◆ Effective quality improvement;
- ◆ Appropriate methods of care and transportation in remote, low-volume settings;
- ◆ Assurance of on-line and off-line medical oversight;
- ◆ Adequacy of data collection to support evaluation and research;
- ◆ Adequacy of communications and other infrastructure; and
- ◆ Ability to provide timely public access and deployment of resources to overcome distance and time barriers.

Rural/frontier EMS providers are acutely aware of the challenges that they face. This document is intended to arm them with information about future directions in which their services and systems might best head to assure their survival, advancement and growth. It is also, as or more importantly, targeted to local, state and national makers of policy and funding decisions to underscore the fragility of rural/frontier EMS, identify the sources of compromise and barriers to success, and to propose solutions and highlight successful practices that they must consider in their spheres of influence.

Introduction

October, 2009 - At 6 AM, Paramedic Sheila Paul began her 24 hour tour of duty at the Western Mountains Ambulance and Rescue (WMAR) base on the tribal reservation overlooking the remote, lakeside town of Chamberlain. She reflected that only three years ago, there had been an ambulance service down in the town as well as the tribal emergency medical services (EMS) ambulance, at the ambulance base where she now stood, only two miles away. Paramedic Paul is one of the former tribal EMS staff now teaming with former Chamberlain Ambulance staff to operate WMAR. Each service had been doing 150 to 175 emergency calls per year at the basic Emergency Medical Technician (EMT) level. Both depended on dwindling volunteer staffs, and rarely interacted except when emergency mutual aid circumstances dictated. Then “it” happened.

The chairman of the Chamberlain town council had a heart attack in his coffee shop one weekday. In the first ten minutes after the 9-1-1 call, Jefferson County dispatch had sent out three page alerts to the Chamberlain Ambulance, raising only a fire department member who volunteered to go to the base to drive. The service had no regular crew scheduling, depending on a group of three or four volunteers who were usually around town on weekdays. After the fourth page, dispatch had asked if mutual aid from the nearby tribal EMS agency was desired. One of the Chamberlain crew finally radioed in to say that he and another ambulance service member were heading to the scene, and mutual aid wouldn't be needed. Arriving at the coffee shop ten minutes later, they found that a large crowd had formed around the patient, who had become unconscious and was now receiving CPR. Confirming pulselessness, Chamberlain's crew requested that tribal EMS respond with an automatic external defibrillator (AED). It was too late.

After the council chairman's death, there was huge controversy in town when it was realized that it had taken nearly 25 minutes for the Chamberlain crew to arrive. Tribal EMS volunteers had been available with their AED, and could have been on scene before the patient's heart had apparently stopped. Neither service had the advanced level emergency medical technicians, cardiac and respiratory equipment and medications that were regularly featured in popular television shows.

Town and tribal leaders asked the state EMS office for assistance in conducting an evaluation of EMS in their communities. State EMS officials were able to provide a community EMS assessment program based on a national model. They brought in a team to work with a local group of interested citizens, EMS

providers, other medical professionals and tribal and town leaders. Over a two-day period, the team interviewed community members and delivered a set of recommendations to town and tribal leaders. Foremost in these findings was recognition that the citizens and leaders interviewed appreciated their EMS providers greatly but assumed that they would have advanced levels of care available and were surprised that this was not the case. The report therefore encouraged the holding of public information meetings to explain the level and type of EMS response available, the cost and benefit of alternative. It recommended that this be followed by a community vote to select the type and level of response desired.

Based on the results of the public information sessions and a subsequent community-wide voting process, the Chamberlain town council requested an ambulance service merger with tribal EMS. By tribal council resolution, the merger was approved. The two services' members also elected to merge. The community-wide vote authorized funding the new service to hire a full-time EMT and Paramedic crew to supplement the combined volunteer force. The service was to be housed in the former tribal EMS base, which could more easily be upgraded to accommodate resident staff. Western Mountains Ambulance and Rescue was born.

Integration of Health Services

October, 2009 - The Western Mountains Ambulance and Rescue (WMAR) EMS-Based Community Health Services (or “community paramedicine”) program began last year, when the small Chamberlain Valley Hospital was forced to close and became a rural health clinic. The next nearest hospital, in Centertown, is 57 miles away -- at best a one-hour trip over the rugged mountain road. The EMTs and Paramedics in the program now provide services ranging from wellness and diagnostics clinics, homebound and hospice support visits, and follow-up care. They work in the clinics, at community sites and events, and visit patients at home. They perform services primarily for the staffs at the two local health clinics as well as Centertown and University Medical Center physicians, who channel feedback and requests for service through the clinic staffs via telemedicine consultation. WMAR and the clinics are reimbursed for most of their preventive and primary care services as well as for acute assessment and treatment services provided on emergency calls that do not require patient transport.

The computer shows that Paramedic Sheila Paul is scheduled to do 20 flu shots at the retirement home, help out as she is available at a blood drive at the local mill, cover for the nurse and physician’s assistant at the tribal clinic at lunch, and complete two home visit service requests. She will take a quick response vehicle for her rounds. Her EMT partner, Pat, will take the ambulance to do two home safety checks (one for a family with a new baby and one for a family with an elderly relative visiting), and a home visit for general assessment of a hospice patient. All EMS-based community health services are provided on an “as available” basis and requesters know that the providers are subject to emergency calls.

◆ Quote From 1996 NHTSA EMS Agenda for the Future On “Integration of Health Services”

“Integration of health care services helps to ensure that the care provided by EMS does not occur in isolation, and that positive effects are enhanced by linkage with other community health resources and integration within the health care system.

EMS provides out-of-facility medical care to those with perceived urgent needs. It is a component of the overall health care system. EMS delivers treatment as part of, or in combination with, systematic approaches intended to attenuate morbidity and mortality for specific patient subpopulations.”

◆ Where We Are

The provision of rural/frontier EMS does not happen in isolation, and the importance of certain areas of integration has often been underscored by issues which these areas have generated in the recent evolution of modern EMS:

- ◆ EMS and local health care providers and institutions;
- ◆ EMS and distant health care providers and institutions and specialty centers and EMS providers;
- ◆ EMS and local/regional public safety and emergency management responders;
- ◆ EMS and the community it serves;
- ◆ Volunteer and paid EMS providers; and
- ◆ Basic life support (BLS) and advanced life support (ALS) providers.

Rural and frontier settings have limited and shrinking local health care resources (e.g. physician practices, hospitals), and these are separated from other sources of care by geographic and organizational barriers. Many providers, particularly in health care facilities, have limited contact and familiarity with EMS and its capabilities. Local primary care and other providers however, by virtue of the lack of resources and patient preferences for seeking them, are often shoulder to shoulder or otherwise in contact with EMS crews to handle patient episodes. These interactions are rarely guided by formal policy/procedures but rather by informal understandings and arrangements that become established over time.

As rural and frontier populations age, the need for primary care contacts and for cycles of episodic hospitalization increase. As local community health resources disappear, the more that community calls upon its EMS providers not only for traditional care and transportation to distant resources, but for a range of informal care, evaluation, and advice. This expectation, sometimes managed in concert with the informal arrangement with local primary care providers and sometimes not, may be beyond the generally basic life support scope of practice of local EMS. It is not unusual for a service in an isolated community to have a 30 to 50% “no transport” rate in a state that runs a 10 to 20% rate overall. It is also not unusual for members of such a service to provide episodes of informal evaluation, advice, and care that are never reflected in an EMS patient/run record.

The further a patient is from an emergency medicine facility, the more that patient stands to benefit from higher levels of local emergency medical intervention. As hospitals close and outpatient services are less available to offer sophisticated resuscitation care, dependence for such intervention falls upon local EMS. Paradoxically, advanced life support (ALS) levels of EMS care are less likely to be available in the rural/frontier setting. This “rural ALS paradox” or “paramedicine paradox” results because comprehensive ALS services are difficult to establish and maintain in systems that experience insufficient call volume to

meet high fixed costs and to enable advanced providers to be paid and retain their skills.

Out of the combination of increased need for community health care resources and the “rural ALS paradox” have evolved a variety of EMS-based community health solutions to augment local health providers, improve the continuum of care, and assure the basic and advanced life support safety net.

“EMS-based community health service” or “community paramedicine” are terms that have been used to describe these locally developed solutions that not only fill a gap in a community’s health needs but further assure that a higher level of EMS exists in the community. They describe a system of augmenting local resources through the use of EMTs, EMT-Intermediates, Paramedics, and other EMS providers as local needs dictate and resources allow. Services provided by EMS personnel may be found in physician practices, certified rural health clinics, hospitals, home health care and hospice services and other health care providers, or directly by EMS agencies themselves. These sponsors sustain an EMS provider presence in the community by employing them to provide a needed resource to those facilities and/or the community, allow them to practice skills relevant to their emergency practice, and assure that they are available to respond to emergencies when required.

In most cases, as EMS providers are integrated into these other local health care resources the legal basis and formality of their practices become more established. In some states, this is facilitated by individual physician delegation of practice and hospital-defined duties based on EMS skills and knowledge leading to licensure/certification as EMTs or Paramedics. In others, more uniform, statewide approaches involving EMS statutory changes have enabled non-emergency, primary care and in-facility practice by virtue of EMS licensure.

Examples of integration through EMS-based community health resources abound. The now classic Red River, New Mexico experiment demonstrated such potential. In an isolated community that found itself without local medical providers, a task group of local, regional and state EMS members and others crafted a solution which involved enhancing the knowledge and skills of local Paramedics in prevention and primary care diagnosis and treatment. Linked closely with physician consultants in a distant facility, they were able to establish a clinic in the local firehouse. With the reintroduction of mid-level and physician medical providers in this community this arrangement ended. However, it effectively demonstrated the potential for one EMS-based community health service approach.

Increasingly, hospitals and other facilities have begun employing EMTs and Paramedics to ease staffing shortages. This practice is widespread in some states, while in others it remains controversial. Such staff are used between EMS calls to

supplement hospital staff in some settings and as regular shift coverage in others. Some further examples:

- ◆ EMS providers in some mining and other industrial settings not only provide emergency care for those settings, but also serve as emergency and primary care resources for the community.
- ◆ In some states, Paramedics are trained as field medical examiners to augment state forensic physicians, and provide immunization and testing services to public safety personnel.
- ◆ The tribal Community Health Representative (CHR) program began with a linkage between nursing and EMS personnel to provide CHR services. A potential EMS-based community health service model for tribal EMS, it has not been completely realized. EMS and CHR workers have been programmatically and fiscally linked with the establishment of Native American self-determination contracts (PL 93-638). Some are still linked, but many have separated, with CHR programs being linked to public health nursing.

The reversal in the CHR programs of the last example above, as well as experience from attempts to expand scope and location of EMS practice in state statute, emphasize the political and practical ramifications of attempting to expand EMS-based community health programs into underserved areas traditionally the practice domain of nursing and other medical/health care provider groups.

Providers in distant hospitals and referral centers have limited connection with rural/frontier EMS providers who bring patients to them. Rural and frontier EMS providers are often volunteers who provide emergency medical care and transportation and then return to home, work, or another non-EMS setting. They know their patient's condition, environment and needs at the time of the emergency call, but this information and other opportunities for clinical feedback or consultation by distant hospital staff may be lost as time and distance from the call increase.

Aeromedical services are vital in rural areas not only to whisk critically ill or injured patients from the scene or local hospital to specialty centers, but as the sole source of advanced life support in many areas. Many aeromedical services report back to local EMS on their patients and fill a feedback void that trauma and other specialty centers may leave. Other services represent an additional "step-removed" in patient information and feedback flow between local EMS providers and distant medical centers. This may become more pronounced as improved Medicare aeromedical service reimbursement brings more providers, sometimes in an uncoordinated/unregulated fashion, into the EMS continuum. In addition, there may be increased call to use air medical services for rural/frontier patient

access to time-dependent interventions (e.g. emergency cardiac catheterization and angioplasty for chest pain patients).

Local EMS providers have grown into formal and informal relationships with EMS mutual aid, specialty response, and public safety partner agencies and personnel that, by virtue of the relatively few staff involved overall in rural/frontier settings, tend to result in adequately coordinated operations at emergency scenes. The communications interoperability problems of urban settings are less prevalent and formal/informal sharing of radio frequencies is one example of these agencies' general cooperation. Urban radio telecommunications and other interagency, interoperability issues following 9/11 which prompt nationwide solutions, as well as quirks in the distribution of federal "first responder" grant funds may help or worsen local EMS/public safety integration.

The presence of an ambulance service in town does not mean that the service is well-integrated into the community. The community at large, and even its leaders, often does not understand the type and level of care that EMS provides. While citizens may expect an advanced level of care in their community because of film and television images of EMS, these expectations are rarely discussed. Tourism and the migration of residents from urban/suburban locales to rural/frontier areas may also import expectations of urban-like levels and type of EMS response.

The lack of an accurate understanding of what local EMS is providing, what other options exist, and what the community's cost would be for such options, is a barrier to community integration of EMS. Many rural/frontier services have come to the brink of extinction, or have closed their doors, before a community discussion has taken place. In other communities, where such discussions have been held, communities have diverted scarce local tax dollars to preserve a more rapid, local advanced level of care. Regardless of outcome, the community's ability to understand, know options for, discuss, and choose the type and level of care it wishes to have and fund, a process of "informed self-determination", appears important to the community integration of EMS. Volunteer and other rural/frontier EMS providers often lack preparation with which to best serve certain community groups and members such as children, the elderly, minority groups, migrant/immigrant workers, farm/ranch families, and persons with disabilities

Volunteer EMS agencies have historically provided not only a vital community service, but an opportunity for social membership, community service fulfillment and recognition, self-improvement and diversion for its members. Volunteer service chiefs find themselves in their positions for a number of good reasons, but not often because they bring leadership and management experience or training to the job. As a result, they and their services vary greatly in their ability to successfully integrate paid compensation into traditionally volunteer work, paid staff into an organization with volunteers, and advanced life support personnel

into a largely basic life support environment. The more successful an agency is at accomplishing these types of integration, the more likely it appears that it will survive.

◆ **Where We Want To Be**

Community EMS providers have an excellent working knowledge of local and regional health care resources. They are able to provide and be reimbursed for prevention, emergency and primary care, triage and referral, as well as medical transportation and other services dictated by community need. Their interactions with local providers are guided by policies and procedures under a system of medical oversight. This continuity extends from tribal and industrial-setting health, medical and EMS services through their off-reservation or out-of-facility counterparts resources.

There are well-understood paths for provider interaction and feedback between local EMS and health care facilities and distant hospitals and specialty centers. Aeromedical programs help to assure continuity of information flow from scene to specialty center and back to originating EMS agency and are effectively integrated response resources. They and other regionwide or statewide systems of care, such as ground critical care transport units are proactively planned and integrated into the EMS system and are reasonably regulated.

An EMS-based community health services program supplements the traditional EMS response model and is one method routinely considered for bridging both community health service and EMS coverage gaps. EMS personnel at all levels are able to contribute to EMS-based community health services. Those who are paid to provide EMS through such arrangements are well-integrated with their volunteer EMS colleagues. EMS medical oversight, including its quality improvement elements, includes (or is well coordinated with) the medical oversight for EMS-based community health service activities. The existing potential for tribal EMS-based community health service programs is developed and implemented in a fashion complementary to, and well integrated with Community Health Representative programs and personnel.

As EMS-based community health service models develop, they also address the needs of new and special populations that have sometimes been overlooked. These include cultural groups, children, the elderly, minority groups, migrant/immigrant workers, farm/ranch families, and persons with disabilities.

EMS continues to be effectively linked with public safety partners (dispatch, law enforcement and fire service), and with nearby EMS providers for mutual aid. EMS personnel are able to draw upon fire, emergency preparedness, law enforcement and public works personnel for assistance and provide assistance to these agencies as needed. They are well-integrated with these agencies for the purpose of multiple and mass casualty response and have effective mutual aid

agreements with surrounding jurisdictions. EMS agencies are effective players in trauma patient care and transfer to appropriate facilities. EMS is recognized as a categorical entity in post 9/11 planning and funding at all levels.

Traditionally volunteer services successfully integrate paid compensation into traditionally volunteer work, paid staff into organizations with volunteers, and advanced life support personnel into a largely basic life support environment. Models such as EMS-based community health service programs, regionalization or cooperatives, alternative models of ALS intercept, informed self-determination, patient billing and/or increased local or regional financial support are pursued by services whose ability to provide basic life support care and transportation is jeopardized by a lack of volunteers, and/or which cannot provide advanced levels of care.

◆ How To Get There

Congress should fund pilot EMS-based community health service projects to demonstrate, and gather successful practice and other information on a variety of these approaches in meeting the needs for increased community health and basic and advanced life support services in medically underserved areas. These should include demonstration projects to assist EMS personnel in maintaining competence in knowledge and skills, expand EMS skill bases, and explore expanded scopes of practices. CMS and other payers should enable the patient care and prevention activities of EMS providers, under physician-directed EMS-based community health service projects to be reimbursable. Evaluations of community EMS, as a part of the “informed self-determination” process recommended in the section on “Public Information, Education and Relations”, should assess opportunities to establish EMS-based community health services.

Federal and state funding should support state EMS offices in developing incentives for local EMS programs to become more integrated into the larger health care system. These incentives should focus on the continuum of care and communication from emergency event through rehabilitation, as well as addressing gaps in community health services. This may include the development of inclusive systems of trauma and other specialty care. States should plan and regulate aeromedical services and other regionwide and statewide systems of care and encourage their integration as partners in the continuum of patient care and communication.

All local, state, and federal all-hazards preparedness planning efforts and rural funding programs should include EMS as an explicit and categorical activity. These programs should take into account the differences between rural and urban approaches to these issues and to maintaining effective infrastructure. Federal programs to meet the needs of special rural populations, including children, farm families, the elderly, culture-based groups, and persons with disabilities should encourage EMS licensees and services as participants.

States should facilitate EMS-based community health service programs by making statutory changes or otherwise enabling EMS providers to participate in them as recommended in the section on Clinical Care and Transportation Decisions/Resources.

State offices of rural health should establish, preferably in statute, multi-disciplinary rural health care committees including EMS. These committees should provide planning, guide and facilitate EMS-based community health services integration, debate and advocate rural/frontier health issues, and promote legislation.

The Indian Health Service should encourage the development of tribal EMS-based community health service programming complementary to and well integrated with Community Health Representative programming.

Recommendations

- ◆ Encourage EMS-based community health service program development through the funding of pilots, cataloguing of existing successful practices, exploration of opportunities for expanded EMS scopes of practice, and on-going reimbursement for the provision of such services.
- ◆ Federal and state incentives should exist for participation in EMS-based health care services and for other forms of EMS integration with the greater health system, public safety services, academic centers, and the community at large.
- ◆ Establish statewide rural/frontier health care committees which include EMS.
- ◆ Federal, state and local programs addressing all-hazards planning, and addressing the specific needs of special rural populations should include EMS as a categorical component. Establish statewide and border-state networks of formal regional EMS mutual aid agreements including EMS licensee recognition.
- ◆ The Indian Health Service should integrate tribal EMS-based community health service and Community Health Representative programming and consider the use of both tribal and non-tribal sources of care.

EMS Research

October, 2009 - WMAR's EMS-Based Community Health Services program has received a research grant, along with University Medical School, to evaluate the effectiveness of the use of EMS providers in performing in an "expanded-EMS" (E-EMS) model and its effects on health care delivery in the rural/frontier community of Chamberlain. WMAR and University Medical School are one of several EMS research grants awarded by a federally sponsored National EMS Research Center. An EMS Fellow, which is a selected physician in an Emergency Physician Residency Program at University Medical Center, has been appointed as the Principal Investigator for the three-year evaluation. All of the advanced level EMS staff at WMAR has received specialized education and training in E-EMS clinical areas, expanded medical protocols, specialized triage, and expanded medical oversight. All E-EMS patient encounters are recorded and reviewed by the Medical Director. Program changes are implemented to assure quality patient encounters and outcomes. Ultimately, the grant's final report will report on the effectiveness of the EMS-Based Community Health Service Program and its impact on the community. The study will also be published in appropriate EMS journals and other periodicals so that all readers will be able to read about the evaluation and its outcomes.

♦ *Illustrative quote*

♦ **Quote From 1996 NHTSA EMS Agenda for the Future On "Research"**

"Research involves pursuit of the truth. In EMS, its purpose is to determine the efficacy, effectiveness, and efficiency of emergency medical care. Ultimately, it is an effort to improve care and allocation of resources. "

♦ **Where We Are**

It has often been said that the growth of EMS has occurred more often as a result of influences such as individual interest and persuasion, financial resources and incentives, transferability of practices and equipment from hospital to prehospital settings, and product vendors than it has from research.

The lack of consistent data with which to conduct EMS research has been a key obstacle. The first national Uniform Prehospital EMS Dataset was not developed until 1993. The fragmented nature of local EMS delivery systems has contributed to this issue by creating barriers to systematic data collection and analysis by researchers or the states in which the services are provided. Research in the EMS field has also lagged because of slow development in areas such as field provider

interest, organized EMS system research centers, and funding. Federal research grant programs do not generally invite research in rural/frontier EMS issues.

The emergency medicine and EMS literature and organized academic emergency medicine have grown much more rapidly in the past 10 years. A network of pediatric emergency medical service research centers was created by HRSA two years ago. At each of the last two annual meetings of the National Association of EMS Physicians, over 80 research abstracts were accepted for presentation. The National EMS Information System project has provided a new version of the NHTSA EMS Uniform Prehospital dataset. Forty-four states have agreed to push toward adoption of the data elements as defined by that dataset as their data systems evolve.

NHTSA recently sponsored an EMS research planning process through NAEMSP which resulted in the 2003 publication of “The EMS Research Agenda for the Future”

(<http://www.nhtsa.gov/people/injury/ems/EMS03-ResearchAgenda/home.htm>). It recommends, among other things:

- (1) The recognition and funding of five national EMS research centers (NEMSRC);
- (2) The recognition and funding of two additional national centers to coordinate multi-center research (NCCMCR) for research questions involving low call volumes; and
- (3) Additional research methodology training opportunities for candidates with doctoral degrees interested in pursuing EMS research.

In rural/frontier areas, call volumes are low and the communities served are relatively small. Rural research in EMS is therefore hampered by the scarcity of data, and the time that it takes to collect data on enough of the events that are being studied to draw meaningful conclusions. Also problematic are data inconsistency, resistance to submitting data, and the protection of patient subjects. Even urban and suburban system researchers shy away from including rural components in their work because of the added time and difficulty of access to source data encountered. If field providers generally lack the background and/or motivation to pursue research questions, rural/frontier providers (especially volunteers) are in a worse position. They most often practice at levels for which training does not include any orientation to research purpose or methodology, and have little extra time for EMS outside of duty and training commitments.

Many practices, such as wound care and reduction of dislocations, have been endorsed in the literature and written into protocols tailored for the delayed transport setting without research support. Other issues of scope and method of practice, such as rapid sequence intubation, field administration of thrombolytics, and field triage of incipient MI to a catheterization lab (bypassing local hospitals and possibly using resources such as a helicopter) are debated, but require more research in the rural/frontier setting for which they are proposed. The

effectiveness of alternative training methods for rural providers and the impact of low call volume on skill retention have not been adequately researched.

There is a need for on-going research in the use of aeromedical and other major systems of treatment and transportation in rural/frontier settings, to assist in planning and decision-making in the seamless and effective use of these resources. Generally, research efforts are needed to investigate the appropriate roles of Critical Access Hospitals and other rural hospitals as members of inclusive systems of trauma and other care, especially in areas where distances to specialty centers are vast.

There is little understanding among rural/frontier EMS providers about how to connect to the research community to pursue questions relevant to their practice, nor are there resources actively promoted in this regard other than one national resource, the National EMSC Data Analysis Resource Center (NEDARC). The Open Source EMS Initiative (OSEMSI) is also pursuing the development of system performance indicators which may be useful in future research, as well as system quality improvement efforts.

◆ **Where We Want To Be**

The recommendations of the NHTSA “EMS Research Agenda for the Future” are endorsed as published with the following recommended amendments:

- (1) No less than two of the five national EMS research centers (NEMSCRs) named and funded have rural/frontier EMS research missions and qualifications;
- (2) Both of the additional national centers for the coordination of multi-center research (NCCMCRs) have missions, in part, and a specific percentage of their projects, dedicated to rural/frontier EMS;
- (3) All these centers with rural/frontier EMS research missions coordinate their rural/frontier activities with one another and with other national resources including the National EMSC Data Analysis Resource Center (NEDARC), the agency operating the National EMS Information System (NEMSIS), the rural health research center network, the Rural EMS and Trauma Technical Assistance Center (REMSTTAC), and state EMS offices and offices of rural health;
- (4) These centers with rural/frontier EMS research missions specifically address the role of EMS-based community health care and prevention, service regionalization, alternative modes of ALS intercept, appropriate local-county-state-federal mixes of rural/frontier EMS system funding, and other models to preserve and develop the BLS/ALS safety net in rural/frontier areas;

- (5) These centers with rural/frontier EMS research missions address the roles of CAHs, the use of aeromedical and other major systems and technology, the application of clinical/operational practices specific to delayed transport settings, the impact of skills retention on performance, and other clinical/operational practices relevant to rural/frontier EMS;
- (6) Availability of research methodology training opportunities is expanded to candidates with bachelor's and master's degrees, particularly those with on-going, first-hand involvement in the clinical operations of rural/frontier EMS systems;
- (7) There is a well-identified set of resources among these centers and other agencies or organizations that offer materials, training and advice in basic research methodology for EMS system participants. These resources are well-communicated through every state and regional EMS system structure to all service providers. These centers pursue bringing researchers and service providers closer together to understand what they stand to gain from collaborating with each other; and
- (8) One or more of these centers is charged with encouraging the formation of state-level EMS research committees, consisting of EMS medical directors, field professionals (volunteer and paid EMTs, Paramedics, and service managers), and researchers. These committees, affiliated with the state EMS office, would consider the need for and methods of research and evaluation projects from both practical application and research perspectives, and promote opportunities for needed research.

Existing federally funded rural health research centers, academic departments of emergency medicine (especially rural medicine residency and EMS fellowship programs, and emergency medicine residency programs in predominantly rural states) take on EMS research and integrate with the network of centers described above. They are well supported by the governmental resources listed above and by non-governmental foundation and other resources.

◆ How To Get There

Funding should be made available through federal agencies such as the Health Resources and Service Administration (HRSA), Center for Disease Control and Prevention, the National Institutes of Health, the Agency for Health Care Research and Quality, The Centers for Medicare and Medicaid Services, and the National Highway Traffic Safety Administration to implement the recommendations of the "EMS Research Agenda for the Future" as amended above. Rural and frontier EMS systems development and operational/clinical practices research should be added as eligible areas of application for all rural, medicine, and health related federal grant program offerings.

Existing federally funded rural health research centers should be encouraged to take on EMS research, to connect with national EMS organizations in conducting research, and be added to the network of centers described above. Academic

departments of emergency medicine, (especially rural medicine residency and EMS fellowship programs, and emergency medicine residency programs in predominantly rural states) should be similarly encouraged.

Non-governmental foundation resources such as the Robert Wood Johnson Foundation, the National Association of EMS Physicians, the ACEP Emergency Medicine Foundation, and the Association for Air Medical Services (AAMS) Foundation for Airmedical Research, should provide leadership in the support of these efforts. They should consider the integration of knowledgeable practitioners and strategists/researchers into the research and funding agenda panels that they form to shape future foundation efforts.

Recommendations

- ◆ Fund and implement the recommendations of the NHTSA “EMS Research Agenda for the Future” but address the following needs and challenges of rural/frontier EMS systems research:
 1. No less than two of the five national EMS research centers (NEMSCRs) named and funded have rural/frontier EMS research missions and qualifications;
 2. Both of the additional national centers for the coordination of multi-center research (NCCMCRs) have missions, in part, and a specific percentage of their projects, dedicated to rural/frontier EMS;
 3. All these centers with rural/frontier EMS research missions coordinate their rural/frontier activities with one another and with other national resources including the National EMSC Data Analysis Resource Center (NEDARC), the agency operating the National EMS Information System (NEMSIS), the rural health research center network, the Rural EMS and Trauma Technical Assistance Center (REMSTTAC), and state EMS offices and offices of rural health;
 4. These centers with rural/frontier EMS research missions specifically address the role of EMS-based community health care and prevention, service regionalization, alternative modes of ALS intercept, appropriate local-county-state-federal mixes of rural/frontier EMS system funding, and other models to preserve and develop the BLS/ALS safety net in rural/frontier areas;
 5. These centers with rural/frontier EMS research missions address the roles of CAHs, the use of aeromedical and other major systems and technology, the application of clinical/operational practices specific to delayed transport settings, the impact of skills retention on performance, and other clinical/operational practices relevant to rural/frontier EMS;
 6. Availability of research methodology training opportunities is expanded to candidates with bachelor’s and master’s degrees,

particularly those with on-going, first-hand involvement in the clinical operations of rural/frontier EMS systems;

7. There is a well-identified set of resources among these centers and other agencies or organizations that offer materials, training and advice in basic research methodology for EMS system participants. These resources are well-communicated through every state and regional EMS system structure to all service providers. These centers pursue bringing researchers and service providers closer together to understand what they stand to gain from collaborating with each other; and
 8. One or more of these centers is charged with encouraging the formation of state-level EMS research committees, consisting of EMS medical directors, field professionals (volunteer and paid EMTs, Paramedics, and service managers), and researchers. These committees, affiliated with the state EMS office, would consider the need for and methods of research and evaluation projects from both practical application and research perspectives, and promote opportunities for needed research.
- ◆ Make rural and frontier EMS systems research an eligible category of application for all rural, medicine, and health related federal grant program offerings.
 - ◆ Existing federally funded rural health research centers, academic departments with rural and EMS interests, rural EMS fellowship programs, and other research-related entities should engage in EMS research. Integrate these entities into the proposed network of rural/frontier EMS research centers.
 - ◆ Encourage non-governmental funding sources, such as foundations, to provide leadership and resources in rural/frontier EMS research efforts (e.g. Robert Wood Johnson).
 - ◆ Make data that are collected through information systems at state and federal levels available for community based assessment and research, and provide tools to promote community-based research.

Legislation and Regulation

October, 2009 - Before WMAR was created, the EMS services in the area were experiencing financial challenges, decline in population, plus recruitment and retention issues. Quality of patient care was becoming a major concern for both communities and the state EMS Office. EMS leaders soon realized that they could not ignore the issues especially since the potential closing of the Chamberlain Valley Hospital was looming in the near future. Both the tribal and Chamberlain EMS agencies could no longer isolate themselves from each other, the community and state. They needed to work together and solicit help from outside resources to survive. County, town and tribal leaders utilized the resources of the state EMS office to implement an EMS assessment program based on a national model. Interested citizens, EMS providers, medical professionals, county government officials, tribal and town leaders were brought together to assess emergency medical services and provide solutions.

Thanks to the cooperative efforts of all involved Western Mountains Ambulance and Rescue (WMAR) was organized and provides advanced level EMS services to the tribal community and the community of Chamberlain. WMAR assumed a leadership role in forming a multi-county collaborative network of EMS agencies. It now has the resources and personnel to advocate and monitor EMS legislation and regulations and pursue state and federal grant funds. Passage of legislation allowing advanced providers to provide patient care within their scope of practice in hospitals and rural health clinics is one example of WMAR's legislative activities.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On
“Legislation and Regulation”**

“Issues relating to legislation, and its resulting regulations, are central to the provision of EMS in the public’s behalf. Legislation and regulations affect EMS funding, system designs, research, and EMS personnel credentialing and scope of practice.”

◆ **Where We Are**

The National Highway Traffic Safety Act of 1966 gave the U.S. Department of Transportation a lead role in funding improvements to management of crash injuries by ambulance services. A short time later, the National Highway Traffic Safety Administration (NHTSA) EMS Division determined that the only effective way to improve medical response to motor vehicle crashes was to support training

for and improvements in the overall EMS system. NHTSA continues to take this more global approach to EMS system support.

The EMS Systems Act of 1973 created the first officially comprehensive federal EMS lead agency and placed it in the U.S. Department of Health Education and Welfare (later the U.S. Department of Health and Human Services, or USDHHS) . A Federal Interagency Committee on EMS (FICEMS), consisting of all federal agencies with EMS missions, has met quarterly periodically to discuss federal EMS issues, but without specific authority to act.

The USDHEW/USDHHS EMS Program continued until 1981 when the Administration's Omnibus Budget Reconciliation Act eliminated it as well as categorical EMS funding to state and regional EMS programs. Federal EMS funds were moved into a general Public Health and Health Services Block Grant fund program where other non-EMS programs had access to them.

Since 1982, the national EMS community has generally favored reestablishing such an over-arching federal EMS program. EMS organization coalition efforts to establish national EMS leadership such as the National EMS Coalition and the National EMS Alliance in the 1980's and 1990's have been short-lived.

Also with the demise of the USDHHS EMS lead agency, the federal focus became shared among existing agencies, including the EMS Division within NHTSA, as well as new agencies created in response to congressional interest in EMS subsystem areas. These included "EMS for Children" and trauma systems development entities within the Health Resources and Services Administration (HRSA) in USDHHS, and more recently an EMS staff within the Office of Rural Health Policy (ORHP), also in HRSA. This entity has managed rural automatic external defibrillator distribution, developed a new Rural EMS and Trauma Technical Assistance Center. There is also an EMS system development component within the Rural Hospital Flexibility Program at ORHP.

While there is ongoing concern about the lack of focus on EMS system development in post-9/11 federal agency shuffling and program funding, the need for a new overarching federal EMS agency is debated. The 2004 federal Gilmore Commission report made such a recommendation and some suggest creating a "U.S. EMS Administration" next to the U.S. Fire Administration in the new Department of Homeland Security.

Others feel that existing federal EMS programs have adequately served the cause of broader EMS system development in effective partnership with national EMS leadership organizations. It is argued that recommissioning, staffing and strengthening FICEMS to specifically coordinate the national EMS development efforts of these agencies would be more effective than pulling the EMS components and staff out of many agencies and centralizing them once more in an

over-arching EMS program. The ability of the new Homeland Security Department to support a centralized EMS agency at this time is also debated.

State EMS systems generally have had enabling legislation which provided a statutory basis. The mission of the state EMS agency varies greatly from state to state, however. In some states, the agency is purely regulatory and it may license services, personnel and vehicles, and approve training programs. In others, the state office embraces a broad mission of statewide EMS system development in addition to its regulatory role. The NHTSA state EMS Technical Assistance Team first revealed the great variability in statutory approaches, and also encouraged states to consider a broader, more uniform authority for statewide system development. Those state EMS offices whose roles are primarily regulatory may have inadequate resources to provide the special support and state-level leadership required to help rural/frontier EMS with their unique challenges. Particularly in states with a mix of urban and rural settings there may be no strong voice at the state EMS level representing rural/frontier interests in policy development.

In rural/frontier states, volunteers have been the foundation upon which many EMS services have been built, and without which perhaps would never have existed. The regulatory and system-facilitating roles of the state EMS office can create a dilemma of conflicting interests. Some states have, or have had, specific statutory language exempting volunteer services from some or all of the standards of service imposed on other EMS providers. Others do not make this distinction and have not experienced requests from volunteer groups to do so.

States grant authority for EMS personnel and services to operate and provide care by either “licensing” or “certifying” them. While the significance of the distinction between these terms continues to be debated, it has taken on an importance in areas such as hospitals and primary care sites (including certified rural health clinics, Critical Access Hospitals, community health centers, private physician offices, and other ambulatory care settings) where EMS personnel are being considered for employment while they are not responding on EMS calls. Physicians and other health professionals who may be involved in their supervision may object to the use of “unlicensed” practitioners. This presents a barrier to EMS-based community health service efforts.

Tribally run EMS systems, to varying degrees from locale to locale, face significant operational issues caused by disconnects between sovereign nation status of tribal governments and state government coordination and regulation of EMS systems and providers. Among other areas, these issues impact:

- Ambulance inspection and certification
- Billing
- Mutual aid agreements

- Data sharing
- County emergency management
- State emergency powers acts

◆ **Where We Want To Be**

A strengthened and staffed FICEMS acts as the lead coordinating agency for federal EMS activities. Rural and frontier EMS interests continue to be represented by ORHP within the coordinated network. Also included in this network will be a federal level training academy with a focus on EMS system development and management. The new formalized network will facilitate the development of model systems, innovative demonstration programs, consensus standards; and information sharing; and assist states with funding, technical assistance and research. FICEMS staff provide a federal EMS presence in domestic preparedness response systems development.

Each state has an EMS lead agency whose authority includes leading EMS system planning and development on an on-going basis. The state EMS office is adequately funded and employs a network of regional or other technical assistance or program support resources to promote robust systems of recruitment and retention, data collection and use, training and education, medical oversight, quality improvement, and other components of strong local EMS systems. In this manner, expectations of EMS providers are made clear and there are adequate resources to assist providers in meeting those expectations. Rural and frontier EMS providers are explicitly represented in state-level EMS policy development. The state offices of rural health and EMS, the office charged with public health, and the office charged with emergency health preparedness collaborate on a routine basis. States participate in NHTSA Technical Assistance Team reassessments every five years.

In states where volunteers still comprise an important segment of the EMS work force, explicit state-level policy is developed on the utilization and support of volunteer EMS providers in the overall mission to assure the availability of advanced levels of care and to make EMS an integral component of local community health programming. Where volunteers are to continue as a fundamental building block of local EMS there is a clearly delineated role context for their use among other types of providers in the system, and there are adequate resources devoted to recruiting, retaining and nurturing them. If standards for participation in the system are different for volunteers than for paid providers, these standards are explicit in state policy, as are the means of assuring the public equal access to expected levels and type of care regardless of the type of personnel employed in the system.

All state EMS offices have transitioned to the term “license” and away from the term “certification” for authorizing EMS provider services to operate and

personnel to practice. States do not lock scopes of EMS practice into statute, but encourage development of “EMS-based community health service” resources and programs in rural and frontier communities, by maintaining flexibility in adapting scopes of practice to those uses. This may include expanding or narrowing a scope of practice to fit the needs of a particular type of setting or a particular locale.

Tribal sovereign nation status and state regulation and coordination of EMS systems and providers integrate effectively to the benefit of patients both on and off reservation.

◆ **How To Get There**

Congress should staff and authorize the Federal Interagency Committee on EMS to coordinate and formalize the network of existing and new agencies with federal EMS responsibility. This entity should be adequately funded to ensure that its programs and the federal agencies it coordinates, are focused to assist national, state and local EMS development. It should have an advisory committee representative of national EMS organizations and interests including rural/frontier EMS interests.

Congress should continue to assure funding for national, state and local EMS system development as represented by the current and planned activities of agencies such as:

- ◆ The NHTSA Injury/EMS Division (USDOT);
- ◆ The CDC Preventive Health and Health Services Block Grant (USDHHS);
- ◆ The HRSA (USDHHS):
 - Office of Rural Health Policy EMS Staff
 - Trauma/EMS Systems Program
 - EMS for Children Program
 - Rural Health Outreach Program EMS Component
 - Medicare Rural Hospital Flexibility Program EMS Component;
- ◆ The Indian Health Services (IHS) Program for Community Health Representatives (CHR) and EMS. (USDHHS).

Just as federal highway funds are dispensed to states based upon achieving certain benchmarks, federal funds for trauma, equipment, bioterrorism and other related uses should be tied to establishment of inclusive trauma systems, implementation of community EMS evaluation programs, enactment of strong state authorizing statutes, and other benchmarks.

With federal resources as needed, the National Association of State EMS Directors should help states assess the status of statutes intended to authorize state

EMS lead agencies. This activity should include the development of model state statutes. Through this activity, and through NHTSA Technical Assistance Team reassessments, states identify where legislation may be required to ensure that EMS has a sufficient legal basis, authority, resources and leadership to provide adequate training, communications, medical oversight, personnel, systems development and integration, vehicles and equipment, data collection, quality improvement and research. State EMS lead agencies are then adequately funded by state legislatures to carry out these responsibilities. Statutory language assures rural and frontier representation on state-level EMS advisory and policy-making panels.

In states where volunteers still comprise an important segment of the EMS work force, state legislatures should authorize and fund ad hoc study committees to delineate the role of volunteers and create related public policy on the support and treatment of volunteers, while fulfilling public expectation on level and type of EMS provided. They should also consider issues of cross-border relationships and the use of personnel and other scarce resources on a permissive compact basis, as opposed to rigid enforcement of state-by-state licensing requirements.

The EMS interface between tribal sovereign nation status and state government regulation and coordination of EMS should be addressed by each state and tribal government.

Recommendations

- ◆ Authorize and fund a restructured Federal Interagency Committee on EMS to coordinate and formalize the network of existing and new agencies with federal EMS responsibility and provide national leadership.
- ◆ Fund FICEMS adequately to continue the current/planned activities of the agencies it coordinates.
- ◆ Create within ORHP, and coordinated by FICEMS, a dedicated, ongoing rural/frontier staff and focus. Create a FICEMS advisory board with rural/frontier representation.
- ◆ Adequately fund the state EMS lead agency to enable it to carry out its designated responsibilities.
- ◆ Create funding incentives and legislation models to help state EMS lead agencies acquire sufficient legal basis, authority, resources and leadership to broadly develop and implement EMS systems on an ongoing basis and to provide sufficient flexibility to adapt to the unique needs of rural/frontier EMS.
- ◆ Assure that state EMS lead agency advisory boards are representative of rural/frontier EMS interests.
- ◆ Create the opportunity for the development of state-level public policy to delineate the roles, support and treatment of EMS volunteers, while

fulfilling public expectation on level and type of EMS provided. Give state EMS agencies the flexibility to effectively implement these policies.

- ◆ The EMS interface between tribal sovereign nation status and state government regulation and coordination of EMS should be addressed by each state and tribal government. An interface between Alaskan Native/American Indian sovereign nations and state government coordination of EMS should be generated by the lead federal agency in collaboration with appropriate tribal leadership agencies.

System Finance

October, 2009 - Western Mountains Ambulance and Rescue's first challenge after being organized was to develop a financial plan. Revenue was projected to decline because of population losses and increased expenses for transportation due to the closure of Chamberlain Valley Hospital. To compensate for these projected losses, WMAR purchased a computer software billing system that utilizes a web-based service to enhance its patient billing services, allowing WMAR to capture allowable reimbursement it might otherwise have lost. County officials have realized the necessity to offer financial subsidies to most frontier and rural EMS services to enable them to serve unincorporated or unorganized townships despite low call volume. WMAR now provides billing services for the rural health clinic and seven rural ambulance services that formed the multi-county collaborative network. The network shares one medical director, while two of the other services provide the network with, respectively, quality improvement and purchasing services. All members of the network have reduced costs for these services while the agencies providing them derive income to support their staff. The collaborative network advocates for legislation, monitors federal reimbursement policies, and applies for state and federal grant funds. This network has allowed WMAR and the other ambulance services to develop community disaster response plans and receive increased grant funding from the federal government.

New legislation was passed to allow advanced providers, like Sheila Paul, to provide EMS-Based Community Health Services within their scope of practice in a hospital and rural health clinic. WMAR is now able to share the cost of advanced providers plus increase their availability. Implementation of the advanced level EMS model for its service area allows WMAR to share the cost of providing an advanced provider during the day with the rural health clinic. The advanced provider responds to medical emergencies, provides patient care at the clinic and patient's homes plus coordinates community prevention programs. WMAR successfully advocated that CMS pilot reimbursing their expanded clinical care activities. This experiment was tied to the WMAR/University Medical Center research project measuring patient impact of EMS-Based Community Health Services. When the results were in, the study showed a decrease in hospitalizations, ED visits, and ambulance transports for the population served. CMS, followed by MCOs and third party payers, subsequently made this reimbursement universally available.

- ◆ “Access to health care for rural Americans has to be examined according to the service needed. It is one thing for a resident to travel 30 to 60 miles for routine examinations or elective surgery. It is a whole different ball

game when the emergency medical service needs to be delivered timely to the resident experiencing a heart attack.”

--- John Baerg, Emergency Medical Technician and Commissioner,
Watonwan County, Minnesota

◆ **Quote From 1996 NHTSA *EMS Agenda for the Future* On
“System Finance”**

“Emergency medical services systems, similar to all public and private organizations, must be financially viable. In an environment of constant economic flux, it is critical to continuously strive for a solid financial foundation.”

◆ **Where We Are**

Reimbursement for EMS has been tied primarily to the transportation function and not necessarily to the delivery of emergency medical care. Managed care organizations (MCOs) have in some cases sought to limit access to EMS for their beneficiaries by narrowing the definition of “medical emergency” and the need for “emergency care” to an after-the-fact medical decision, rather than one made by a prudent layperson at the time of the event. Some MCOs also have instructed patients to call their primary care physicians prior to dialing 911, which may unnecessarily delay needed emergency care.

Historically, rural and frontier services have kept their costs low by employing volunteers to provide a fairly austere set of basic life support services. Equipment and training support would come from community fund-raising and/or modest requests for local governmental subsidy. Volunteer EMS providers have been increasingly challenged in their staff recruitment and retention efforts. As public and professional expectations of EMS increase, training and licensure have become more complex and difficult to support on a volunteer basis.

Services have turned turn to paying stipends and/or to employing part-time and full-time staff at those times when it is most difficult to attract volunteers, and/or to provide EMT-Intermediate and Paramedic levels of care when they are not available on a volunteer basis. This, in turn, places greater pressure on volunteer service leaders to employ more sophisticated business practices such as patient billing, reimbursement, staff employment (subject to complex requirements of the Fair Labor Standards Act, especially where volunteer staff are mixed), and to request government subsidization.

Many services have experimented with subscription programs. Some have been abandoned when state insurance rules interpreted that they may constitute illegal insurance offerings, when they require the billing of non-subscribing patients as well, or when Medicare requirements for documentation of fees became too complex for smaller services.

Many volunteer services, have considered patient billing as contrary to the community-service nature of their operation. Others simply have had no expertise or infrastructure for collecting fees or maintaining the business functions. The absence of any billing among many providers in a geographic region caused Medicare and other reimbursement allowances, based on an average of the billing rates for all providers in that region (“prevailing charges”), to be artificially low. So, even where patient billing has been done in rural and frontier areas, low reimbursement rates and the relatively low volume of calls have historically generated inadequate revenue to underwrite the essential costs of full-time preparedness (as opposed to “preparedness based payment”).

Recent efforts by the federal government to overhaul the Medicare reimbursement system for ambulances, have removed some of these historical under-reimbursement influences, and have attempted to account for the greater per-call expense of providing care in rural and frontier areas. But this work stopped short of placing a cost figure on the provision of rural/frontier EMS care and reimbursing at that level.

Medicare now provides Medicare reimbursement for air medical interfacility transports that originate in rural areas when the sending provider simply certifies medical necessity for the flight. Yet similar interfacility transports by ground, while deemed “appropriate” from a Medicare safety standpoint (“EMTALA” -- the Emergency Medical Treatment and Active Labor Act), may still be subjected to retrospective medical necessity determinations for reimbursement purposes, and inadequately reimbursed. Further, the transfer of rural/frontier patients from trauma and other specialty treatment centers back to local hospitals where family-access is improved is discouraged by present Medicare reimbursement practices.

While Medicare has recently provided increased rates of mileage reimbursement for rural ambulance services, these are tied to definitions of “rural” that do not include some rural areas and, overall, do not cover the fixed and other costs of maintaining the EMS safety net infrastructure in rural/frontier areas. The issue of responsibility for maintaining this infrastructure has not been resolved. The impact of closure of rural/frontier hospitals has been addressed in part by the establishment of Critical Access Hospitals. Other than reimbursement provisions for ambulance services attached to those hospitals, there has been no federal, and limited state, focus on maintaining a safety net of “critical access ambulance services”.

Pressure on Congress to address the “rural problem” in EMS reimbursement and financing is countered by concerns over reducing reimbursement for urban services in a federal health policy that resists increasing the overall EMS patient care reimbursement “pot”. Surveys of state EMS directors in 2000 and 2004 placed “financing” among the top four most important issues for rural EMS.

Consumers may subconsciously expect advanced levels of EMS care, but have little idea of the level of care actually provided in their community. Therefore, if there is a discrepancy between the two, they do not realize it nor seek an opportunity to participate in determining the level of care to be afforded. The concept of “informed self-determination” (voters being informed of, and selecting among alternative levels and type of EMS response and their attached price tags) when implemented in several frontier towns in one state resulted in selection of paid, Paramedic staffing despite significant cost increases.

Where a single rural/frontier service might be unable to sustain basic or advanced levels of care, or assure certain business, operations or clinical functions, multiple services have demonstrated the ability to regionalize or form a collective to do so. Regionalizing has enabled them to share services such as alternative forms of advanced life support intercept, medical oversight, billing, quality improvement, and to seek financial support on a greater geographic basis such as a county or regional tax district.

Currently, EMS service providers that do bill, have at least two major choices for doing so. First, they may use a billing service which could charge \$10 to over \$20 per invoice processed, a \$5,000 to \$10,000 annual cost for a small service with no guarantee of return. Other billing services charge based on a percentage of amounts billed or actually received. Using a billing service still requires a service chief or other service representative to review patient/run records and other materials submitted to the billing service.

Second, they may employ billing staff or assign a billing function to staff with other responsibilities. In rural/frontier areas, smaller services are less likely to have the call volume to justify the cost of full-time billing staff who would be able to set up a billing system tailored to the particular service. Increasingly, service chiefs or their designees are responsible for submitting patient bills and reimbursement claims. A number of computer assisted billing services are available, with a range of accessibility considerations for rural/frontier providers. Some software packages are installed on a local computer. They may cost thousands or tens of thousands to install and implement and hundreds or thousands in annual maintenance fees, plus the cost of a computer with adequate processing power. At least one web-based service is now available which significantly reduces the initial cost to under a few thousand dollars and half that in subsequent years. It also introduces a Medicare form quality review function to reduce the frequency of denials.

For the purposes of program administration, the Federal government has created many different methods for defining rural America. To date, there is no universally accepted definition of “rural” across Federal agencies and various definitions are used simultaneously in developing policies for grant formulas or adjusting payment for services purchased by the Federal government. While it

may be appropriate to use multiple definitions of rural, the definition used for a particular program or purpose should adequately describe the geography that the program or purpose is intended to serve.

EMS is different from other health care services because it is a service delivered directly to the consumer often times during life-threatening events when minutes and even seconds count. Unlike other health care encounters swift response determines EMS outcomes. In accessing emergency care, time and miles are as much key determinates in mortality and morbidity as the specific injury or illness. In emergency care, access is a combination of resource availability and time based care.

There is universal agreement in the ambulance industry that the current method of defining urban and rural for the purposes of Medicare reimbursement is problematic. This method uses Metropolitan Statistical Areas, with the Goldsmith modification. The use of county boundaries, even with the Goldsmith modification, leaves large areas that are rural in nature within urban boundaries. Literature supports this conclusion (see Apppendix J for specific citations). There is not, however, universal agreement within the industry on the specific approach that should be used.

There are other methods that could be used or developed to better distinguish between the urban and rural landscape for the purpose of defining ambulance reimbursement. In recent years, significant progress has been made at the Federal level in developing adequate funding and resource availability through cost based reimbursement for physician and hospital services in the Federally Qualified Health Centers, Rural Health Clinics, and Medicare Rural Hospital Flexibility (Critical Access Hospital) Funding Programs. There are no equivalent programs for EMS. In addition, existing definitions and funding mechanisms do not adequately describe rural for the purpose of assuring timely access to emergency healthcare.

The issue of using county boundaries as a rural EMS definition and a specific recommended model is explained in detail in Apppendix J. This method would combine several existing federal approaches (Urbanized Areas, Zip Code Tabulation Areas and Rural-Urban Commuting Areas) into a model that achieves a unit of measurement that is flexible, precise, stable and more consistent than using county boundaries and yet practical as the RUCA areas are mapped to zip codes.

◆ Where We Want To Be

Adequate primary revenue streams currently exist for EMS. They include fees for service (Medicare, Medicaid, private insurance, private pay and special service

contracts), governmental subsidies (local or statewide) and, in some cases, subscription services. Rural and frontier providers explore regional relationships, to effect economies of scale for certain components that contribute to needed costs (e.g. support of paid advanced life support staff).

Managed care organizations (MCOs) and other payers fully integrate EMS into their provider networks; don't limit access to the 911 emergency response system; and compensate rural and frontier EMS providers at a level of preparedness based payment which covers the cost of providing the basic and advanced life support safety net service in a low volume setting. Patient billing and reimbursement is based on care, advice and referral rendered as well as transportation provided as necessary. It does not require transportation. Reimbursement is predicated on signs and symptoms as they present to the dispatcher in an organized system of Emergency Medical Dispatch (EMD), which dictate the resources dispatched. In the absence of such an EMD system, reimbursement is predicated on signs and symptoms as they present to the responding EMS crew. In either case, reimbursement is not subject to retrospective determinations of medical necessity that may or may not depend on the patient's final diagnosis. The "patient condition codes", developed as part of the Medicare ambulance negotiated rule-making process at the turn of this century, are implemented by CMS.

EMS agencies are fairly reimbursed for interfacility transports when responding in good faith to the request of a sending facility. Interfacility transports that are "appropriate" from an EMTALA perspective are fairly reimbursed and not subjected to retrospective medical necessity determinations. Medicare and other payers enable patients to migrate easily back to local community hospitals from trauma and other specialty centers for recuperation and access to family and local resources.

In the post 9/11 process, federal emergency response agencies recognize and fund EMS systems and providers as an explicit category. There is a focus on enhancing day-to-day EMS response infrastructure, especially in rural and frontier areas where it tends to be less able to sustain itself robustly, so that there is adequate infrastructure upon which to construct disaster response capacity. The nature of the EMS provider agency is not a barrier to funding.

Rural and frontier EMS systems lead the nation in realizing the potential of the EMS system to fulfill broader public health and primary care outreach roles for traditionally underserved communities. Managed care organizations and other payers encourage pilot EMS-based community health service programs for integrating EMS into the provision of some primary care services, so that rural/frontier populations do not suffer by virtue of their distance from traditional medical care.

Community EMS assessment and informed self-determination programs (see “Public Information, Education and Relations” section) guide local government subsidization of community EMS.

Rural/frontier services have access to and utilize patient billing services which do not present barriers to use such as significant upfront or staffing cost, or need for expertise. The definition of “rural”, and its degrees, are based on a fair model such as that presented in Appendix J.

◆ How To Get There

Congress should authorize and appropriate sufficient funds for the Centers for Medicare and Medicaid Services (CMS) to reimburse EMS providers based on the per-call cost of maintaining full-time response with specific recognition of the increased cost of doing so in rural/frontier areas.

Congress and/or CMS, as appropriate, should implement the following EMS reimbursements reforms:

- Call-components performed by first-response, ALS intercept, ambulance and other EMS response agencies which should be eligible for reimbursement, not duplicated on any given call, should include emergency response, assessment, treatment, triage and transportation or other disposition that may, or may not, involve traditional transportation.
- Retrospective review of medical necessity should not be done for emergency response calls.
- Immediately implement the patient condition codes model from the Negotiated Rule-Making process.
- Remove the “35 mile” restriction on cost-based reimbursement for EMS agencies that are owned and operated by Critical Access Hospitals.
- Employ definitions of “access” and “rural” (and its degrees) in reimbursement, such as those presented in Appendix J, which will help to maintain an adequate rural/frontier EMS infrastructure.
- Assure that interfacility transports that are “appropriate” from an EMTALA perspective are fairly reimbursed and not subjected to retrospective medical necessity determinations.
- Adopt reimbursement practices that encourage patient treatment and recovery at the facility closest to the patient’s home that is desired by the patient and capable of providing the care required at the given stage of recovery.
- Facilitate the use of subscription services as a part of the overall funding of the EMS safety net infrastructure, in cooperation with state insurance authorities.
- Consider a single fiscal intermediary for all EMS providers, and develop a “successful practice” guide to assist EMS providers in maximizing billing efficiency and accuracy.

Post-9/11 preparedness and response funding programs such as those of the Department of Homeland Security, CDC, HRSA, and ODP should be made available explicitly and categorically to EMS systems and providers to assure that there is adequate prehospital and hospital medical response infrastructure upon which to build disaster capacity. Private and for-profit providers of EMS should be eligible for funding to improve infrastructure, as they may be the sole providers in some rural/frontier communities. More specific language about EMS participation should be integrated into grant guidance, and technical assistance should be provided to assist EMS agencies in successfully competing for available grant dollars.

CMS should define EMS personnel as eligible care-providers under physician direction for the purpose of reimbursing that physician, and/or the EMS agencies directly, for primary care and prevention services they render. CMS, MCOs and other third-party payers should fund EMS-based community health care pilot projects.

Providers of EMS billing software, hardware and services should tailor turn-key products for the ease of use and low acquisition cost to make them attractive to smaller rural/frontier providers.

State EMS offices should encourage, and federal funding should support, demonstration projects and ongoing systems for regionalized approaches to assuring medical oversight and quality improvement, the provision of advanced levels of care, EMS education, patient billing, data collection and submission, and other key components of EMS delivery to which smaller rural and frontier services may not otherwise have access. Rural Hospital Flexibility, Rural Health Network and similar programs should be considered as means to facilitate regionalization efforts. County, regional, or state level taxing authorities should be considered to fund networks or regional programs where they effect economies of scale or improve access to EMS care. Congress should fund pilot projects of this nature to establish successful practice guidance.

Recommendations

- ◆ Authorize and appropriate sufficient funds for CMS (Medicare and Medicaid) to reimburse EMS providers based on the per-call cost of maintaining full-time response with specific recognition of the increased cost of doing so in rural/frontier areas. Third party payers must also recognize the increased cost of rural/frontier ambulance service.
- ◆ Implement the following federal reimbursement reforms for emergency and interfacility EMS clinical care and operations:
 - Call-components performed by first-response, ALS intercept, ambulance and other EMS response agencies which should be eligible for reimbursement, not duplicated on any given call,

- should include emergency response, assessment, treatment, triage and transportation or other disposition that may, or may not, involve traditional transportation.
- Retrospective review of medical necessity should not be done for emergency response calls.
- Immediately implement the patient condition codes model from the Negotiated Rule-Making process.
- Remove the “35 mile” restriction on cost-based reimbursement for EMS agencies that are owned and operated by Critical Access Hospitals.
- Employ definitions of “access” and “rural” (and its degrees) in reimbursement, such as those presented in Appendix J, which will help to maintain an adequate rural/frontier EMS infrastructure.
- Consider a “critical access ambulance service” definition or other means to assure a minimal level of EMS infrastructure in all geographic areas.
- Assure that interfacility transports that are “appropriate” from an EMTALA perspective are fairly reimbursed and not subjected to retrospective medical necessity determinations.
- Adopt reimbursement practices that encourage patient treatment and recovery at the facility closest to the patient’s home that is desired by the patient and capable of providing the care required at the given stage of recovery.
- Facilitate the use of subscription services as a part of the overall funding of the EMS safety net infrastructure, in cooperation with state insurance authorities.
- Consider a single fiscal intermediary for all EMS providers, and develop a “successful practice” guide to assist EMS providers in maximizing billing efficiency and accuracy.
- ◆ Make federal and state domestic preparedness and response funding programs such as those of the Department of Homeland Security, CDC, HRSA, and ODP available explicitly and categorically to EMS systems and providers including private and for-profit agencies.
- ◆ CMS, MCOs and other third-party payers should fund EMS-based community health care pilot projects and define EMS personnel as reimbursement-eligible care-providers under physician medical oversight for primary care, prevention, and other services they render.
- ◆ Form, and fund through county, regional, state or federal tax dollars, rural/frontier EMS operational or service-contracting networks in those areas where they provide economies of scale, improved access to EMS care, improved quality and/or increased tax payer value.

Human Resources

October, 2009 - Western Mountains Ambulance and Rescue (WMAR) participates in rural/frontier EMS leadership management training offered by the National EMS Academy and State's EMS and Office of Rural Health Programs. It utilized team-building techniques to improve communications and job performance between paid and volunteers providers. WMAR monitors the work stress level of its personnel and utilizes the Critical Incident Stress Management Program. It takes advantage of federal, state and private grant monies to provide continuing education for its providers.

Western Mountains Ambulance and Rescue developed a public relations plan to improve its image, media relations and community support. This plan, coupled with a newly initiated state retirement and recognition plan, has helped with recruitment and retention. To further enhance recruitment and retention efforts, WMAR is working with state and local representatives in developing a special health insurance package for its volunteers.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On
“Human Resources”**

“The task of providing quality EMS care requires qualified, competent, and compassionate people. The human resource, comprised of a dedicated team of individuals with complementary skills and expertise, is the most valuable asset to EMS patients.”

◆ **Where We Are**

Before the birth of the modern EMS system in 1973, rural and frontier ambulance services were largely provided by funeral homes, which found it to be a convenient, low investment “down-time” use for its hearses and staff. The question of conflict of interest between their two businesses was apparently not considered significant at the time. Other areas had no local ambulance service. As it became customary and then, in the 1970's, increasingly mandatory to train and license ambulance attendants and provide more sophisticated and expensive patient care equipment, funeral home operators largely abandoned the field. Into these areas, and others that had no previous local ambulance service, began appearing organized groups of volunteer EMS providers. Without these volunteers, some communities would have continued without local ambulance service.

In the past 20 years, a number of forces have created conflicting interests regarding volunteers for state EMS agencies and EMS services. They are called

upon to make decisions weighing the interests of patient care and worker safety against the ability to recruit and retain volunteers. Increasing public expectation about level and type of care may demand services that cannot easily be provided on a volunteer basis. The delay in volunteers' response from home or work, or failure to respond, has created concerns in some communities. While some rural and frontier volunteer services have been able to advance to the EMT-Intermediate level, few can support a full-time volunteer Paramedic level of care.

Many states have had entry-level licensure/certification standards for those providing patient care on ambulances requiring less training than the national standard Basic EMT level. These lower standards were often created to help recruit volunteers, but there has been increasing pressure for states to use Basic-EMT as the national minimum standard. Some service leaders feel that their services are jeopardized when states propose to eliminate the lower entry level standards. Keeping EMS personnel safe and healthy in the workplace has required increased annual training, testing and certification.

Adding to these pressures on volunteer services are the increase in two-wage-earner households, limited or lack of EMS pay, increasing exposure to danger in providing EMS, perceptions of increased personal liability, lack of enlightened leadership in some areas, and limited funding for training, equipment and supplies. Finally, as the population ages, volunteer services face an increase in call volumes concurrent with a decline in the physically qualified volunteer pool. For services that do them, nursing home and routine transfer calls fill an increasing portion of the ambulance service's activity. This may drive away potential volunteers who are attracted by the emergency nature of EMS.

Surveys of state EMS directors in 2000 and 2004, indicated that the greatest need for rural services is the adequate recruitment and retention of staff. In the same surveys, "24/7 coverage" rose from the 22nd most important rural EMS issue in 2000 to the second most important in 2004. "Response time" rose from 20th place in 2000 to 5th in 2004.

Many services have initiated stipend programs where pay per call, pay per hour while on a call, and/or pay for shifts or while available for call have been instituted to attract members. Rural and frontier EMS remains one of the medical fields most dependent on volunteers. A multi-state region offered a volunteer service managers course from the late 1980's through the early 1990's, but today there is no national model of training for service managers in how to recruit and retain volunteers, and manage the volunteer service. The FEMA "EMS Recruitment and Retention Manual" (FA-157), published in 1995, remains available as a free tool for developing recruitment and retention strategies.

There is a new NHTSA initiative beginning in 2004 called "The EMS Workforce for the 21st Century". Its goal is to promote a sufficient, stable and well-trained workforce to sustain the nationwide EMS system, and will address strategies to

develop a sufficient workforce and such issues as leadership and provider health and safety.

◆ **Where We Want To Be**

The community EMS assessment and informed self-determination processes (described in the section on Public Information, Education, and Relations) encourage the community to consider the contribution of EMS volunteers in the type and level of care that it selects and subsidizes. Rural and frontier services maintain a mix of paid and volunteer staff that assures fast response and an advanced level of care consistent with the results of the assessment and self-determination processes. Volunteers have adequate incentives to volunteer and paid staff are adequately compensated earn a comfortable living in their community. EMS-based community health services, regional partnerships, alternative ALS intercept methods, evidence-based EMT-I curricula addressing rural needs, and health service networks are used to assure tiered EMS response including advanced levels of care.

Trained service managers effectively recruit and locally train their staff, motivating and retaining them through a mix of incentive stipends (such as professional liability and health coverage and a retirement benefit), public education, excellent training resources, personal support, career ladders, and appropriate awards or recognition for dedicated providers. Such managers balance the needs of volunteer and paid staff effectively and create a cohesive and motivated team.

Other local health care providers have completed “bridge to EMT” courses, and assist in basic and advanced life support capacities. The trained service manager provides appropriate service oversight, and effective business practices that provide adequate revenue through patient billing and/or local subsidy and access to grant funds to support and improve operations. EMS worker safety is a part of every service’s quality improvement system, orientation and policy/procedure guidance, and is the subject of on-going research at all levels.

◆ **How To Get There**

Federal rural health manpower recruitment and retention planning should be extended to EMS and, where necessary, funding strategies should be implemented through state EMS offices and offices of rural health to provide leadership, technical assistance and funding in programs to recruit, train and support rural and frontier EMS personnel and services. The NHTSA “EMS Workforce for the 21st Century” project should be implemented and supported. The U.S. Department of Labor should include funding for rural/frontier EMS in its recruitment and retention funding efforts, particularly with consideration of workforce retraining in areas hard hit by unemployment. State EMS offices and legislatures should

create policy on the role of volunteers in the EMS workforce as recommended elsewhere in this document.

Grant funding should be directed to EMS-based community health service, regional cooperative and network formation and other demonstration projects to establish successful practices for the effective use of EMS human resources as recommended in other sections of this document. Successful practices in rural/frontier EMS recruitment and retention should be identified and maintained by the Rural EMS and Trauma Technical Assistance Center, and shared with all state EMS and rural health offices. Services are reimbursed and subsidized adequately to maintain the paid staff they need based on informed self-determination.

A national EMS service leadership and service management training model should be developed and shared with all states. This should contain successful practices in volunteer human resource management, governing board management, and cultural competence, as well as other aspects of EMS service management and leadership. Leadership training, systems of critical incident stress management based on accepted national models, occupational safety training and other support should be available to all rural/frontier EMS personnel.

National models for performance recognition programs (e.g. American Ambulance Association's "AAA Stars") should be disseminated as successful practices scaled to local application. Community employers who allow employees to respond to EMS calls should be targeted in similar programs.

Recommendations

- ◆ Extend federal and state rural and health manpower recruitment and retention planning leadership, technical assistance and funding specifically and categorically to rural/frontier/tribal EMS and implemented through state EMS offices, state offices of rural health or other appropriate entities.
- ◆ Analyze, at the state EMS agency level, rural/frontier workforce recruitment and retention efforts and develop statewide plans for improvement.
- ◆ Establish incentive programs to recruit and retain rural/frontier EMS human resources.
- ◆ Foster the development of a culture of volunteerism and community service through local schools in partnership with community agencies.
- ◆ A national EMS service leadership and service management training model should be developed and shared with all state, territorial and tribal governments. This model should include successful practices in EMS volunteer and paid human resources management.
- ◆ Target occupational safety in EMS for research funding and the development of guidance materials.

- ◆ The REMSTTAC should maintain and disseminate successful practices in implementing components of the national EMS service leadership and service management training model.

Medical Oversight

October, 2009 – At the beginning of her shift, WMAR Paramedic Sheila Paul's first order of business is to complete the inspection checklist of the patient care and communications equipment while her partner, EMT Pat Dawson, checks and services the two ambulances. With only 400 calls a year, the need for a second ambulance is based on the frequency of overlapping calls caused by the average four hour garage-to-garage time required to complete an ambulance call. The nearest mutual aid ambulance service is 30 miles away-- down one mountain and up another. The two services are linked by a regional consortium through Centertown Hospital for mutual aid, local training, medical oversight, emergency medical dispatch, billing, purchasing, and quality improvement, but geography dictates their usual operational independence.

One of Sheila and Pat's tasks this morning is to attend the regional trauma quality improvement meeting. This quarterly review is led by Dr. Debra Dean, the consortium's regional EMS medical director who is an emergency physician at Centertown Hospital. Dr. Dean is the medical director for two such regional groups, depending heavily on routine meetings with the QI coordinators via the telehealth system to monitor system and provider performance. Today's meeting involves representatives of each of WMAR's collaborative network EMS agencies, and is coordinated by the EMS agency that facilitates QI for the consortium. It also involves a wide range of personnel from the hospital. The group discusses key trauma cases from the previous quarter and seeks ways to improve outcomes for injured patients in their area. These reviews have already led to changes, allowing EMS providers to activate the helicopter service from the regional trauma center at University Medical Center. These protocol changes have resulted in precious time saving for critically injured patients. The helicopter often now arrives at a remote designated landing zone near the scene, or in other cases at the Centertown Hospital, at about the same time that the patient is arriving by ambulance .

Dr. Dean, received her medical director training using a web-based training program sponsored by the National Association of EMS Physicians and the state EMS agency. She uses the telehealth network to regularly collaborate with other physician medical directors across the state and has become a mentor, helping to train other providers about the responsibilities involved in medical oversight.

- ◆ “Rural EMS medical oversight often resembles a hobby; activities occur during a physician's free time and have associated costs. The benefit is the satisfaction of improving patient care beyond the physician's usual practice environment.”

-- Jim Upchurch, M.D., REMT-P; Indian Health Service

♦ **Quote From 1996 NHTSA *EMS Agenda for the Future* On “Medical Direction”**

“Medical direction involves granting authority and accepting responsibility for the care provided by EMS, and includes participation in all aspects of EMS to ensure maintenance of accepted standards of medical practice. Quality medical direction is an essential process to provide optimal care for EMS patients. It helps to ensure the appropriate delivery of population-based medical care to those with perceived urgent needs.”

♦ **Where We Are**

EMS medical oversight (medical direction) may be “on-line” or “off-line”. The on-line medical director is the physician or physician-designee who gives direction to the EMT in the field by radio, telephone or other device. The off-line medical director is the physician who is responsible for the overall medical care provided by the EMS service or system.

Medical oversight intensity and availability vary from state to state, and may vary within a state depending on local interest and expertise. In some states, every EMS provider service is supposed to have a medical director, while others assign regional medical directors and sub-regional medical directors to oversee the systems, and still others have no local, regional or state level EMS medical oversight at all. Few states have funded medical oversight on the regional or local level, and many states do not fund state level medical directors. Some states and locales extend physician medical director resources by employing Paramedics and nurses to perform support functions.

Where physician resources and the funds to compensate them for EMS medical oversight have been scarce, some states have been flexible in allowing regionwide consortia to form for medical oversight purposes. This may also mean, however, that a few physicians may have this responsibility for many more services and personnel than they can reasonably monitor. This may impact on-line medical oversight when it is provided by distant physicians who may be unfamiliar with local capabilities. This impacts off-line medical oversight by limiting opportunities for interaction between medical directors and EMS providers for case review, training, and other quality improvement purposes.

Dependence on volunteer medical directors at any level has become difficult as liability for medical director activities, resulting insurance considerations, and pressure by hospitals and other employers for increased productivity has reduced the availability of such volunteers. Additionally, the physician workforce in rural and frontier areas available to serve as EMS medical directors consists principally of Family Medicine and other primary care physicians. They typically are engaged in a full-time, primary care practice, and struggle to find time for EMS

activities. Physician assistants are widely used in rural/frontier clinical settings, but in some states they lack the legal authority to delegate to EMS licensees. This is a barrier to on-line medical oversight where physicians are not available in an emergency facility on a 24 hour a day basis.

The primary care physicians who serve most often serve as candidates for EMS medical oversight in rural/frontier areas often lack the experience or training for this purpose, but find the training that is available to be geared to Emergency Medicine physicians. They find the training to be offered on an infrequent basis in places that are not accessible to most rural/frontier practitioners, to be relatively long and to contain material of questionable use in rural/frontier settings.

In 1996, the National Highway Traffic Safety Administration and the HRSA Maternal and Child Health Division sponsored the development of a “Guide for Preparing Medical Directors” through the National Association of EMS Physicians (NAEMSP) and the American College of Emergency Physicians (ACEP). This one-day course was intended to be offered through state EMS offices and elsewhere to increase course accessibility. Some states have sponsored decentralized medical director training programs and have tailored them to meet local needs. The Indian Health Service has a 15 year history of providing an EMS medical directors course for physicians with little or no EMS experience who now have EMS medical oversight responsibilities. Other statewide and regionwide courses have been designed by Family and Emergency medicine specialists to provide training for teams of rural health care providers in the management of a wide range of medical emergencies.

Since 2002, there have been a number of new but disconnected rural EMS medical directors programs sponsored by state ACEP chapters and others. Some states have developed statewide protocols or guidelines to assist local medical directors in standard-setting and review.

EMS personnel who are employed in clinics, emergency departments, and other capacities while not involved in EMS, are authorized to do so differently from state to state. In some states this amounts to no more than physician delegation of practice, which may differ from doctor to doctor or facility to facility. In others, this is defined in statute and regulations or is not allowed.

There is no statutory authorization for medical oversight in some states. Quality improvement and medical oversight activities may not be protected from discovery unless it is conducted under the umbrella of a hospital or medical practice. National insurance carriers may not provide coverage for activities related to the on-line and off-line activities of medical directors.

♦ Where We Want To Be

Every EMS provider service, basic life support and advanced life support, has a medical director who is ideally a physician and has received EMS medical director training and is actively involved in EMS and system components such as dispatch protocol development, performance/quality improvement, education, and training. The medical director is either directly responsible for all practice by EMS providers, both emergency and EMS-based community health care, or coordinates closely with those physicians responsible for the providers' community paramedicine activities. The medical director is linked to the wider medical and EMS communities to promote EMS/physician community integration, continuity of care, and the maintenance of accepted standards of medical practice. Leadership development and educational programs for rural/frontier EMS medical oversight recognize the importance of primary care physicians in these roles. A statewide system of medical oversight is authorized by statute which provides specific authority for, job descriptions of, and defined relationships among, medical directors from the state to the local level.

Medical directors are adequately compensated for their services, and medical director compensation is at least partially reimbursable under Medicare. Where scarcity of physician medical directors dictates, regionalization of medical oversight is encouraged utilizing physician extenders to assist in local roles. These physician extenders may be physician assistants, nurse practitioners, nurses, or Paramedics who have attended an EMS medical director course.

◆ **How To Get There**

States should enact statutory provisions to authorize and fund a statewide system of medical oversight, to protect physicians and their hospital or other employers from liability related to their on-line and off-line responsibilities, and should mandate medical oversight for every BLS and ALS provider service. State EMS offices, hospital associations, and physician professional organizations should work together to expand existing quality assurance or peer review statutes to include EMS personnel and EMS agencies.

Federal and state funding should be made available to assist state EMS offices to disseminate rural/frontier medical director training programs (including the use of distance learning/telemedicine resources), to create effective medical oversight networks consistent with statewide EMS system design, and to recruit and retain rural and frontier physicians to serve as EMS medical directors.

Congress should fund Medicare to reimburse ambulance services which employ and compensate medical directors for EMS or EMS-based community health service purposes. To qualify, medical directors must attend an EMS medical director training program and be actively involved in off-line/indirect medical oversight of the service. Other federal programs which fund physician practice in rural/frontier areas should require physician involvement in local EMS medical

oversight and consideration of opportunities for EMS-based community health service efforts to augment physician practice.

NAEMSP, ACEP, NRHA, the American Academy of Family Practice (AAFP) and NASEMSD should coordinate, design and approve a rural/frontier EMS medical directors course model based on the “Guide to Medical Director Preparation” or some other standard they devise. The IHS EMS medical directors course should be strongly considered in the development of this model. This program should include considerations of integrating EMS providers into other aspects of community health care, and the provision/coordination of medical oversight for those purposes. This type of program should be incorporated into formal curriculum within medical schools and residencies of primary care specialties. It should also address ways of achieving the highest standards of emergency care possible with the limited resources available in rural/frontier areas.

The ability to use EMS personnel for patient care, the ability to be reimbursed for that patient care, and other incentives to serve as an EMS medical director should be provided to physicians in primary care sites and hospitals .

The use of regionalized on-line medical oversight from hospitals distant to the scene should be considered by states given the availability of telecommunications technology today. Secondly, using mid-level physician extenders to provide on-line medical oversight, and the use of standing orders in systems with an off-line medical director who has implemented an effective quality improvement program should be permitted.

The Rural EMS and Trauma Technical Assistance Center should maintain all examples of EMS medical director training and related statutes from states or other organizations for distribution to those requesting them.

Recommendations

- ◆ Establish statewide networks of EMS medical oversight, including medical directors at the local, regional, and state levels as appropriate in a given state to ensure the provision of EMS medical oversight for every EMS service.
 - Implement at least one full time equivalent position of state EMS medical director in every state with a job description as defined by consensus of EMS-related professional medical and state EMS director organizations.
 - Compensate EMS medical directors for the EMS medical oversight services which are provided. The level of compensation should be equivalent to the level of compensation the physician would experience (for the equivalent hours) in their normal clinical practice.

- Require that EMS medical directors be physicians, but encourage the use of physician extenders and regionalized arrangements of medical oversight to increase the EMS medical oversight resources in rural/frontier areas.
- EMS medical directors must actively participate in local, regional, and state EMS program planning and implementation. States must seek out and include rural/frontier medical directors for these purposes.
- Implement EMS based community health programs and services through an interdisciplinary approach involving EMS operational and medical oversight components and primary care professionals.
- ◆ Assure federal and state funding resources to maintain these statewide networks of medical oversight.
 - States must assure funding of the state EMS medical director.
 - System/provider reimbursement should be based on the cost for providing EMS services and patient care delivery. The cost associated with trained and qualified EMS medical oversight should be included in this cost basis.
 - Federal programs which provide financial incentives to physicians serving in rural areas (underserved and hospital based programs, e.g. Critical Access Hospital program) should require involvement in the local EMS system. If the EMS system is without medical oversight, these physicians should be required to provide this service.
 - Federal agencies and professional EMS organizations should provide and maintain technical assistance resources for EMS medical oversight.
- ◆ Prepare and protect rural/frontier emergency and primary care physicians to serve as EMS medical directors and assure adequate systems of performance improvement to support their activities.
 - Legislate, at the state level, peer review protection for EMS system quality management and performance improvement initiatives to exist without fear of discovery and litigation.
 - Assure liability coverage for EMS medical oversight to be included in the normal liability coverage for primary care and emergency medicine physicians. This coverage should provide protection for both the clinical and administrative duties associated with EMS medical oversight.
 - Review all existing EMS medical oversight courses and establish a Rural/Frontier EMS Medical Directors Course which should be made available and distributed through multiple mechanisms to allow maximum access by EMS medical directors.
 - EMS medical oversight must be introduced in medical schools and

included in the curriculums of primary care residency programs
(both MD and DO degree-granting institutions).

Education Systems

October, 2009 - Because Western Mountains Ambulance and Rescue Service had been created through “informed self-determination” the new service became eligible for many equipment and training grants. These grants allowed the service to purchase new state-of-the-art advanced patient monitoring equipment for use by EMS providers; its first EMS Event Monitoring System or EMS² (“EM-Squared”); and computer hardware and software to support that system, and to start patient billing and reimbursement through a web-based service. The new monitoring devices have improved telemedicine patient monitoring for cardiac arrest and stroke with University Medical Center. The training grants enabled the Chamberlain Regional School to tie its distance-learning equipment into the telemedicine and distance-learning circuits linking the Chamberlain Valley and tribal health clinics with the Centertown Hospital, and with the University Medical Center, which serves as the regional trauma center and EMS training facility.

These new capabilities allowed the new service chief to take an ambulance service management course entirely by distance learning, and he and his colleagues to take all classroom portions of the EMT-Intermediate and Paramedic programs while staying in Chamberlain. Two years later, enough local EMTs and Paramedics had graduated to replace the temporary staff brought in for this period. The combined staff now had eight full time EMTs and Paramedics, as well as some occasional “per diem” paid EMTs and Paramedics from Centertown to assure the core staffing. It also retained or attracted 18 volunteer EMTs and EMT-Intermediates who fill in on the first ambulance and respond to calls as needed, and who staff the second ambulance on a scheduled, on-call basis.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On “Education Systems”**

“As EMS care continues to evolve and become more sophisticated, the need for high quality education for EMS personnel increases. Education programs must meet the needs of new providers and of seasoned professionals, who have a need to maintain skills and familiarity with advancing technology and the scientific basis of their practice.”

◆ **Where We Are**

EMS training and education have been guided by national standard curricula developed by NHTSA since 1971 when the first such curriculum, the 81 hour EMT-Ambulance, was released. Evolving local and statewide needs and/or constraints caused deviations from or adaptations to these curricula and in the scopes of practice implemented in each state. These and other issues, such as the consideration of expanded scopes of practice, led NHTSA and partner organizations to move away from dependence on standard curricula and to develop a more general “*National EMS Education and Practice Blueprint*”.

Following development of this document and the dissemination of the *EMS Agenda for the Future*, both in 1996, the direction of EMS education was again studied by a NHTSA work group which ultimately produced “*Emergency Medical Services Education Agenda for the Future: A Systems Approach*” in 2000. This document describes an EMS education system with five components:

- National EMS Core Content
- National EMS Scope of Practice Model
- National EMS Education Standards
- National EMS Education Program Accreditation
- National EMS Certification

A process of implementing the recommendations of this document is now underway.

As with all EMS system implementation issues in rural and frontier areas, education systems development is hampered by great distances, inadequate resources, and a sparse and largely volunteer target population, for whose members EMS is a secondary occupation. Federal EMS officials had identified and largely funded 304 EMS regions in the U.S. by 1978. A central function of these regional programs became training. After the federal program’s demise in 1982 under the Omnibus Budget Reconciliation Act, many of these regional programs also evaporated, though many were able to continue through assistance from the states and through strong tuition-revenue generating training programs. These regional programs became important resources of training and education oversight, technical assistance, and training equipment and supply resources. They largely contributed to the availability of decentralized EMT courses.

Today, the accessibility of basic EMS training like EMT, ambulance vehicle operator, and CPR varies from state to state, with both distance and tuition costs serving as barriers. As education standards have become more sophisticated (e.g., increased emphasis on degree-granting programs and accreditation of EMS education institutions), they promote centralization of training and reduce access to training and education for rural/frontier providers. This phenomenon is less important at the basic EMT level but becomes more evident at intermediate and advanced levels of training as do other specific barriers to EMS education in rural and frontier areas, such as:

- A sparse and geographically scattered student pool that may include a high percentage of adult learners with little formal education, along with full-time jobs that require flexible scheduling;
- A small number of well-evaluated, qualified instructors;
- Insufficient course subsidization and funding of equipment and technical assistance support resources;
- Limited access to health care facilities for supervised clinical experiences;
- Limited understanding of other health and medical disciplines and lack of interdisciplinary training and collaboration;
- Limited exposure to various conditions and patient presentations during training;
- Problems with skill maintenance in low-volume systems;
- The lack of knowledgeable and active physician supervision; and
- Inadequate quality assurance of the educational programs and instructors.

While there are some innovative mobile EMS training programs, the bulk of advanced training, and even basic training in many areas, requires EMS personnel to travel to a distant location. Satellite and cable television distance learning programs were offered by some state EMS programs as early as the late 1980's to bring continuing education to rural and frontier areas. Some of these were initially successful then discontinued because of dropping enrollment or the cost of satellite programming.

More recent federally funded telehealth and distance learning projects and systems have opened this resource further, yet there is no EMS community consensus on a national model for its application in making basic through advanced training more accessible to rural and frontier providers. In fact, some distance learning and telehealth systems established by different federal and state agencies are not interoperable. Education consortia have been formed with local, regional, state and federal partnerships to provide EMS educational programming through local and distance learning resources on a nationwide basis.

The state to state variability of licensing levels and scopes of practice at the intermediate levels between above the EMT level and below the Paramedic level creates confusion. For rural/frontier volunteer services this is a problem because such an intermediate level may be the highest to which many such services may currently aspire.

Rural and frontier areas lose their young career-minded resources. Those who wish to advance or change careers must often relocate to obtain the requisite education. Once removed from the area, they often do not return, because career advancement is easier in more urban areas. There are career-bridging programs in

some areas, but they are not universal or particularly accessible to rural/frontier health professionals.

There is great variability in the quality of EMS education programs and instructors, particularly in rural/frontier areas, where they are most decentralized by necessity. States have attributed some of the cause of this variability to the practice of directing resources to course-by-course approval rather than toward training program-by-training program approval, and are changing this. Nonetheless, where instructor resources are scarce, state and regional education officials face the dilemma of balancing course-quality regulation with access to education. Because training resources are often centralized in urban areas, training and education often take on an urban flavor.

EMS service managers are often appointed or elected because they are respected for their clinical and interpersonal skills, and may be among a scarce few willing to take on the attendant responsibilities. They often do not come prepared with, respectively, medical oversight or management experience or training. National EMS management training/education certificate models are lacking.

Training is needed in specialty situations. Rural/frontier providers practice in austere and often dangerous settings and their patients are often victims of injury due to those settings. The logging industry remained the occupation with the highest death rate in 2002 (117.8/100,000) according to the Bureau of Labor Statistics, followed by fishing in second place (71.1/100,000), and with agriculture ranking eighth (28/100,000).

Training programs for safely managing patients in these environments have been available to EMS for many years. Nationally-renowned wilderness EMS programs are offered by several programs across the country. The “Farm Medic” program, now housed at Cornell University, has trained over 22,000 students since its inception in Rochester, N.Y. in 1981. A new, 8 hour “Timber Medic” program is being piloted by the Agro Medicine Center at East Carolina University at sites in North Carolina, South Carolina, and Virginia.

◆ Where We Want To Be

The *Emergency Medical Services Education Agenda for the Future: A Systems Approach* is successfully implemented reflecting careful consideration of the needs of rural/frontier practice and the development of EMS-based community health services.

Once a community has conducted EMS assessment and informed self-determination processes and has determined the type and level of care it wishes to maintain and subsidize, there are adequate training and education resources made available to support that level of operation. Basic EMS programs, including EMT, Emergency Vehicle Operators Course, and CPR, as well as basic safety

programs such as hazardous materials awareness and self-protection from airborne and bloodborne pathogens, are made available through local instructors and distance learning resources accessed in the community.

There is a national model for providing basic, intermediate, and advanced EMS training and continuing education to rural/frontier areas which uses a mix of distance learning, decentralized practical skills learning, and clinical learning and experiential content packaged in a manner appropriate to the level of training. This model includes consideration of appropriateness for the non-traditional student and accessibility for rural/frontier providers. Courses and continuing education programs and the instructor, equipment supply, and technical assistance infrastructure to assure their accessibility are well-subsidized in rural and frontier areas.

There is a national model certificate program for training rural/frontier EMS provider service managers. These are especially geared to EMTs and others who are elected as service chief in volunteer organizations with no other management training or experience.

Training and education content at all levels emphasizes the means for integrating EMS into the community and regional health care systems for the continuity of emergency patient care, and to take advantage of EMS-based community health service type opportunities. There is an emphasis on accessing all clinical and practical skill resources in the local community, such as health clinics, home health and hospice programs, physician offices, school health offices and pharmacies. This not only reduces the dependence on more distant resources, but improves EMS integration as providers at these sites become familiar with EMS providers.

Advanced level training continues to be available through certificate as well as degree-granting programs. Within EMS practice levels, and between EMS and other health professions, there are career pathways supported by career-bridging training and education programs to support career advancement and change for those who desire to remain geographically in place. These are well-supported by distance-learning resources and telehealth systems which are locally available, and all such systems are interoperable. These are not only employed for training and continuing education, but as a part of EMS training program and instructor quality improvement.

State and regional training approval entities have the authority to evaluate and dismiss instructors, but also provide technical assistance to facilitate their meeting contemporary standards.

◆ How To Get There

NHTSA should assure that the implementation process for the *Emergency Medical Services Education Agenda for the Future: A Systems Approach* considers the needs of rural/frontier practice and EMS-based community health services, as well as other recommendations below.

Congress and the states should authorize and appropriate funding for an initiative to increase accessibility to EMS education systems in rural and frontier areas.

This Rural/Frontier EMS Education and Training Initiative should include:

- Funding to geographic areas which considers progress in completing community EMS assessments and informed self-determination processes;
- Funding through state EMS offices where needed, to develop effective systems of training and education program/system quality review and approval;
- Development of flexible models for the implementation of a national model, including certificate and college-based programs, for providing basic, intermediate, and advanced EMS training and continuing education to rural/ frontier areas and its implementation through state EMS offices;
 - Development of this model should include strong consideration of the EMS education dissemination mechanisms, policies and procedures established by successful education programs and consortia;
 - Recognition within the model that EMS education will be provider-need specific, conducted with varied teaching techniques emphasizing hands-on training and, where appropriate, distance learning, to assist the transfer of learning and retention of essential skills and knowledge so as to provide state-of-the-art rural emergency care;
 - Recognition within the model that educational processes should include the evaluation of resources (e.g. EMS system, health care, public safety) and needs (e.g. for cultural competence) at a local level to encourage an integrated community-based approach to EMS education;
 - Recognition within the model that training and education should be driven by health risks of the local population and time-sensitive access to definitive care (e.g. mental health, trauma, stroke).
 - Emphasis within this model on integration of EMS within the health care system, EMS-based community health service opportunities and program development, and the use of local health service resources as clinical and practical skills development settings;
 - Emphasis within the national model on the adult, non-traditional student;
- Development of a national model to enhance career mobility within EMS practice levels, and between EMS and other health professions, to enhance the ability of rural/frontier areas to retain health workers who wish to gain new skills or advance or change health careers;

- Emphasizing optimal interdisciplinary care of the ill or injured patient, including complex event management such as cardiac arrest and multiple casualty incidents;
- Subsidization of training courses and continuing education programs and the instructor, equipment supply, and technical assistance infrastructure necessary to make them accessible to rural/frontier areas;
- The use of interoperable systems of telemedicine and distance learning to improve the accessibility of training courses, effective quality improvement, and continuing education programs;
- Incentives to increase the involvement of university medical centers and area health education centers to provide outreach educational programs to rural and frontier areas;
- Recognition of the need for flexible scheduling to accommodate the lifestyle realities of rural volunteers;
- Improved rural/frontier accessibility to training programs in emergency medical dispatch, critical incident stress management, and occupational safety training; as well as continuing education programs with curriculum content geared to rural/frontier application as appropriate;
- Improved rural/frontier accessibility to a training program for service managers which includes EMS leadership, public and elected official advocacy, public education, grant-writing, data collection, research, governing board management, and volunteer management among other topics.
- Encouraging the development of realistic, dynamic patient simulators and mannequins for case-based and psychomotor skill training and critical-decision making improvement. Support for the development of patient simulator outreach programs;
- Development of state/regional stockpiling, and sharing of expensive training devices such as mannequins and patient simulators; and
- Ongoing assessment by rural/frontier EMS agencies and local hospitals of their resources and needs, and searching for common educational opportunities.

Recommendations

- ◆ Address, as part of the development and implementation process for the *Emergency Medical Services Education Agenda for the Future: A Systems Approach*, the unique needs of rural/frontier practice and EMS-based community health services through the development of non-traditional education methods focused on:
 - Vocational training;
 - Maintenance of clinical skills; and
 - Affordability.

- ◆ Fund at the state and national levels a Rural/Frontier EMS Education and Training Initiative including:
 1. Funding to geographic areas which considers progress in completing community EMS assessments and informed self-determination processes;
 2. Funding through state EMS offices where needed, to develop effective systems of training and education program/system quality review and approval;
 3. Development of flexible models for the implementation of a national model, including certificate and college-based programs, for providing basic, intermediate, and advanced EMS training and continuing education to rural/ frontier areas and its implementation through state EMS offices;
 - Development of this model should include strong consideration of the EMS education dissemination mechanisms, policies and procedures established by successful education programs and consortia;
 - Recognition within the model that EMS education will be provider-need specific, conducted with varied teaching techniques emphasizing hands-on training and, where appropriate, distance learning, to assist the transfer of learning and retention of essential skills and knowledge so as to provide state-of-the-art rural emergency care;
 - Recognition within the model that educational processes should include the evaluation of resources (e.g. EMS system, health care, public safety) and needs (e.g. for cultural competence) at a local level to encourage an integrated community-based approach to EMS education;
 - Recognition within the model that training and education should be driven by health risks of the local population and time-sensitive access to definitive care (e.g. mental health, trauma, stroke).
 - Emphasis within this model on integration of EMS within the health care system, EMS-based community health service opportunities and program development, and the use of local health service resources as clinical and practical skills development settings;
 - Emphasis within the national model on the adult, non-traditional student;
 4. Development of a national model to enhance career mobility within EMS practice levels, and between EMS and other health professions, to enhance the ability of rural/frontier areas to retain health workers who wish to gain new skills or advance or change health careers;

5. Emphasizing optimal interdisciplinary care of the ill or injured patient, including complex event management such as cardiac arrest and multiple casualty incidents;
6. Subsidization of training courses and continuing education programs and the instructor, equipment supply, and technical assistance infrastructure necessary to make them accessible to rural/frontier areas;
7. The use of interoperable systems of telemedicine and distance learning to improve the accessibility of training courses, effective quality improvement, and continuing education programs;
8. Incentives to increase the involvement of university medical centers and area health education centers to provide outreach educational programs to rural and frontier areas;
9. Recognition of the need for flexible scheduling to accommodate the lifestyle realities of rural volunteers;
10. Improved rural/frontier accessibility to training programs in emergency medical dispatch, critical incident stress management, and occupational safety training; as well as continuing education programs with curriculum content geared to rural/frontier application as appropriate;
11. Improved rural/frontier accessibility to a training program for service managers which includes EMS leadership, public and elected official advocacy, public education, grant-writing, data collection, research, governing board management, and volunteer management among other topics.
12. Encouraging the development of realistic, dynamic patient simulators and mannequins for case-based and psychomotor skill training and critical-decision making improvement. Support for the development of patient simulator outreach programs;
13. Development of state/regional stockpiling, and sharing of expensive training devices such as mannequins and patient simulators; and
14. Ongoing assessment by rural/frontier EMS agencies and local hospitals of their resources and needs, and searching for common educational opportunities.

Public Information, Education and Relations

October, 2009 - As part of the Chamberlain community emergency medical services assessment coordinated by the State EMS office at town and tribal leaders' request, staff used the opportunity to educate community members on the EMS system alternatives available in similar communities. Members of the Chamberlain Town Council and leaders of tribal EMS were sent several documents provided by the Rural EMS and Trauma Technical Assistance Center (REMSTTAC) on EMS system models, costs, and implementation strategies. Based on the assessment results, the leadership group chose a community advanced levels model that merged tribal EMS and Chamberlain Ambulance, and eventually became Western Mountains Ambulance and Rescue.

Members of the community were kept informed about the new service through regular mailings. They were also provided a document on how to "Make The Right Call", which is part of a federal program to inform citizens on the proper use of 9-1-1 and access to emergency services. More recently, EMS leaders have engaged in a program, through WMAR staff, to educate the community members on injury prevention, under a program called "Safety Advice from EMS (SAFE)". As part of their public health mission, the WMAR Public Information Officer writes a monthly health column in the local newspaper to address health risks. Tribal and Chamberlain community members participate in monthly local EMS advisory committee meetings to provide input and support. A year after WMAR was formed, the EMS advisory committee conducted a review of WMAR operations. This included a comparison of baseline response and patient care information from the original assessment compared with the same measures from WMAR Quality Improvement data generated over the past year.

♦ Illustrative quote

♦ Quote From 1996 NHTSA EMS Agenda for the Future On "Public Information, Education and Relations"

"Public education, as a component of health promotion, is a responsibility of every health care provider and institution. It is an effort to provide a combination of learning experiences designed to facilitate voluntary actions leading to health."

♦ Where We Are

A statewide consumer survey in a rural state in 1993 indicated that 87% of respondents expected Paramedic-level care if they had a heart attack and called EMS. There is little reason to believe that this is an atypical expectation in 2004

for residents of rural/frontier areas, given the popular media portrayal of EMS care. It suggests a major disconnect between the service level expected and that actually delivered in areas where EMS is heavily dependent on volunteers and limited to primarily basic life support care. There is poor understanding among town and county executives and elected officials at all levels of the cost and benefit considerations of EMS. An on-going NHTSA project is aimed at being better able to gauge community value placed on EMS.

Two state EMS offices have piloted community technical assistance team processes, where expert teams come to a community and evaluate the local EMS system. Similar assessments have been performed of two tribal EMS systems and others by public and private organizations in other states. These processes involve not only the EMS providers but local leaders and interested community members, thus providing them with a clear picture of what EMS can do, and what might be required to make improvements.

The National Highway Traffic Safety Administration has a long history of supporting activities to enhance the public's knowledge and appreciation of EMS. It partners with the American College of Emergency Physicians in promoting a nationwide "EMS week" recognition every year. Materials for this event are made available to all EMS provider services to conduct their own community-level events. NHTSA has also recently updated its Public Information, Education and Relations (PIER) training program, which has been a valuable resource to EMS providers for several years. It also offers injury prevention curricula for use by EMS providers ("Safety Advice From EMS (SAFE): A Guide to Injury Prevention", bystander care ("First There First Care" – developed in cooperation with IHS) and public access ("Children: Make the Right Call") educational materials.

The EMS for Children program at HRSA has generated many public education activities throughout the country over the years. These are available through the EMSC national resource centers. Other agencies and organizations such as the American Red Cross and American Heart Association have programs and materials geared to making the public better prepared to prevent and respond to medical emergencies.

Unfortunately, in communities served by volunteer EMS providers, there is a lack of EMS management, personnel and financial resources to take advantage of programs and materials such as these to conduct effective public education. The focus of these volunteers is primarily on staffing the ambulance for emergencies, keeping up with necessary training, and raising funds to stay in operation.

Most rural and frontier EMS personnel are known in their communities and garner credibility in health matters beyond just emergencies. This credibility is tempered by the provider's own health habits. This "health expert" status can be effective in trying to educate the community in health and medical and EMS

system use issues. It can also limit EMS system advancement where the “experts” lack motivation or ability to provide care at a higher level, and stand in the way of others who might attempt to do so.

Rural/frontier areas are experiencing increases in minority populations which increase need for addressing cultural competency in the provision of EMS and in communicating effectively on the appropriate use of EMS and other community health services.

◆ **Where We Want To Be**

Every rural/frontier community has the opportunity to have a community EMS system assessment including an objective technical assistance team visit whose members come from outside that community. This assessment will provide baseline information for community leaders about the current capabilities of their local EMS. It will put this information in context with state and national standards of care and system capability. It will also present alternative models used in similar communities with their attendant cost/benefit considerations. The “informed self-determination” process then provides that information to the community. Finally, it guides community decision-makers in determining the type and level of EMS that it desires and the means with which it is funded.

As a result of informed self-determination, communities without access to systems of advanced levels of care, and/or that have difficulty raising sufficient crew to always respond, devote financial resources and/or find alternative methods of making more effective use of existing resources (e.g. community paramedicine approach or combination of other community jobs) to increase levels of care and staff availability.

Annual EMS system evaluations are done by a local team including community members and local leaders, using the standards, recommendations, and baseline data contained in the original community EMS system assessment report. These evaluations are shared with the community, along with public education on the appropriate use of the EMS system.

Increased EMS staff availability in the community affords sufficient staff time to use nationally available EMS and health promotion public education resources to conduct effective programming in areas identified by the community EMS system assessment process, and by local public health and other agencies as areas of particular local need. These activities incorporate consideration of locally-specific cultural competency in the provision of EMS and in communicating effectively on the appropriate use of EMS and other community health services.

◆ **How To Get There**

Federal EMS partners should support the National Association of State EMS Directors and the National Organization of State Offices of Rural Health in considering the variety of experience across the country in community-level EMS system evaluation, and creating a national model for easily transferable community EMS system assessment and informed self-determination processes which may be offered through states to local communities. Community EMS evaluations should assess opportunities to establish EMS-based community health services.

Congress and the states should appropriate funding annually, to assist states in implementing these community EMS system assessment and informed self-determination processes in rural and frontier communities. The Rural EMS and Trauma Technical Assistance Center and NASEMSD should be utilized to assist states in their delivery. Local EMS system development funding from state and federal sources should be contingent upon progress in completing and implementing the results of community EMS system assessments.

Federal and state EMS offices, in partnership with public health agencies, should continue to develop and distribute public information resources to local EMS providers to be tailored for local use. These materials should incorporate consideration of cultural competency issues. The NHTSA PIER and SAFE programs should be continued and widely disseminated. The Rural EMS and Trauma Technical Assistance Center should evaluate available EMS and other health-related public education resources appropriate to rural/frontier areas and make them known and available.

As with EMS week activities and materials, Federal partners should create ongoing EMS public education activities which may tie in with state and local ongoing activities through the use of common themes and logos. Local EMS agencies should be pro-active in utilizing these materials to raise the profile of their service, to recruit members/employees, and to improve public understanding of the EMS system and its purpose and capabilities.

Recommendations

- ◆ Develop a national template for community EMS system assessment and informed self-determination processes to help communities determine and be accountable for their own EMS type, level and investment.
- ◆ Fund processes for community EMS system assessment and informed self-determination. Consider regional and statewide resources (e.g. aeromedical services) in implementing these processes.
- ◆ Federal and state EMS agencies, in partnership with public health agencies and national organizations, should continue to develop and distribute data-driven public information resources to local EMS providers which are coordinated with national campaigns but can be tailored for local use and

cultural considerations. Develop materials which target the potential community volunteer pool, highlighting the educational and other benefits to volunteers and the benefits to businesses that support volunteers.

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Prevention

October, 2009 - WMAR staff participate regularly in community prevention projects to help reduce morbidity and mortality within the community. As part of their EMS-based Community Health Services (EMSCHS), EMS staff provide services ranging from home and playground safety checks, to community wellness and diagnostic clinics, homebound and hospice support visits, and hospital post-discharge follow-up care. These activities are reimbursed through private and public insurance providers. Other agencies, like the State Department of Transportation, provide funding to support prevention programs, such as WMAR's car seat safety program. The federal Regional Injury Control Research Center assists WMAR in establishing, funding, and evaluating other prevention activities.

Paramedic Sheila Paul and EMT Pat Dawson are among several Paramedics and EMTs in the WMAR service who participate in the EMS-based Community Health Services. Most of the EMSCHS providers are paid full-time staff, but some of the volunteer EMTs and EMT-Intermediates regularly participate as their personal lives allow. Each has a specific set of services that they are qualified to provide by virtue of their EMS training. In some cases the knowledge or skills required are expanded through training by their EMSCHS medical director who is a family practitioner at both the Chamberlain Valley and tribal health clinics and who works closely with Dr. Dean, their EMS medical director. In all cases, their medical directors delegate to them the ability to provide those services, whether it as an extension of the state's EMS practice and protocol system for EMS calls or a delegation of his own licensed medical practice.

The EMCHS has been able to educate special populations including children and the elderly in such areas as poisonings, falls, electrocutions, and playground safety, using readily available materials and programs from state and national organizations and agencies. The WMAR uses every opportunity to prevent unintentional injury through courses in schools, associations, and community meetings. While it will take time to determine the overall impact of these programs, and share these findings with local and state officials, the prevention activities have been extremely successful in helping responders know and understand community issues and in getting community members to know and understand the EMS service and its capabilities.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On "Prevention"**

“Prevention provides an opportunity to realize significant reductions in human morbidity and mortality—all with a manageable investment. Engaging in prevention activities is the responsibility of every health care practitioner, including those involved with the provision of EMS.”

◆ **Where We Are**

As federally-funded prevention programs have passed through our communities and states over the past 30 years, EMS providers have participated to varying degrees, but rarely as a central component of their mission. The Indian Health Service community-based Injury Prevention Committees, on the other hand, are an example of 25 years of successfully perpetuated prevention activities that have included tribal EMS as members.

When state EMS offices have taken a role in the dissemination of a prevention program, there seems to have been the most widespread penetration among EMS services. Examples of these activities include:

- Playground safety evaluation
- Infant/child car-seat sizing and distribution
- “Prom night” and “shattered dreams” drunk driving consequences demonstrations for teens
- “Buckle up” teaching in schools and communities
- CPR and first aid training in schools
- Blood pressure clinics
- Home-safety evaluations
- Teen suicide gatekeeper programs
- Farm equipment safety for farm families and workers
- NHTSA “Safety Advice From EMS” injury prevention programs for the public
- “Injury Prevention In A Bag” resource kit for EMS providers

EMS providers in small communities are often looked to as authorities on health matters beyond emergency care, and have the potential to lend credibility to prevention messages. That credibility is affected, however, by the providers’ own health habits. In rural/frontier areas, where personnel, and especially volunteers, are at a premium, insistence upon or promotion of good personal health behavior is not common.

◆ **Where We Want To Be**

In communities where the need for adequate EMS staffing has been addressed, community EMS staff serve as, or work closely with, formal local health advocates and are linked to community and regional health resources (e.g. transportation, mental health, food/shelter, substance abuse, weight control) for referral purposes. Needs assessments, conducted with community input, and

community health surveillance determine the areas of primary focus, respecting cultural variety and needs.

Health plans, state and private agencies, and other promoters/providers of prevention services routinely work through local EMS staff to get their messages and services to the community.

Community EMS staff in these roles also serve as health advocates and safety officers for their EMS colleagues. They not only facilitate and enforce occupational health and safety requirement compliance, but actively seek incentives for members to pursue healthy habits. “Perks” for volunteering for, or being employed by, the EMS service may include health club memberships, or discounts on recreational equipment or access.

Prevention is built into EMS job descriptions and initial training curricula. “Are you safe to work on an emergency scene?” becomes as important a consideration as “is the scene safe?”

◆ How To Get There

As local EMS providers acquire staff to augment volunteers in an EMS-based community health service capacity, one of the roles of these professionals will be prevention. Health plans and other payers should be pursued to financially support local EMS providers to serve in an on-going prevention role as field workers and organizers, as well as other EMS-based community health service capacities in partnership with other healthcare system participants.

Programs funding and/or promoting the existence of community health advocates/promoters should be encouraged to use EMS staff wherever possible. Local and state EMS agencies should communicate regularly with their public health counterparts to discover new ways that local EMS may help the latter’s mission. Local and state EMS leaders should partner with public health, traffic safety and other counterparts to explore CDC, NHTSA and other funding sources that might support prevention projects and programs.

National organizations whose mission is one area of prevention or another should be encouraged by EMS leaders to collaborate in channeling their messages, materials, and financial support through local EMS.

The National Highway Traffic Safety Administration and all EMT training and education entities and EMS service and educational accreditation entities should include provider health, safety, and prevention content in all curricula, standards for curricula, and standards for EMS service and educational institution accreditation.

Recommendations

- ◆ Make prevention one of the EMS-based community health service roles of adequately staffed rural/frontier EMS provider agencies.
- ◆ Among local, state, federal and national EMS and public health agencies (and other agencies with prevention roles), cooperatively develop and fund community health advocacy roles and prevention programs for rural/frontier EMS personnel that are mutually beneficial.
- ◆ Federal agencies and national organizations with prevention roles should channel existing programs through state EMS agencies to local EMS provider agencies.
- ◆ Provider agency policy/procedures and innovative incentives, EMS curricula, and accreditation and other standards target EMS provider health, safety and prevention.

Public Access

October, 2009 - WMAR has been instrumental in advising the tribal community to install emergency call boxes in frontier areas of the reservation so that all people can access emergency services. These were also successfully placed on isolated areas of the interstate that traverses the community. These call boxes are automatically routed to the regional public safety answering point (PSAP) 9-1-1 call center located at Centertown Hospital. The PSAP provides emergency medical dispatch for all 9-1-1 calls, assuring that life-saving priority medical instructions are given to callers prior to the arrival of emergency responders. Responders are also kept up to date during the response by the trained dispatchers, who enter new call-related information to be displayed on their EMS² screens in the ambulance. The crew is advised on patient condition from crashed vehicle ACN units or bystanders, on obstacles and best routes from roadside telematics devices, and on the level of response or status of specialty responders that may be needed.

WMAR's new event and resource monitoring system (EMS²) keeps all EMS staff fully aware of EMS activities that occur daily allowing them to see how the community is accessing the EMS system. During check-in, staff are updated on schedules and events, hospital and specialty responder status and all operational responses that are currently underway. Maps are available on the computer screen for access to all locations, but these are particularly useful when responding to special populations, such as assisted living homes, retirement centers, and developmentally disabled homes. Special instructions are also loaded into the system on how to access protected communities and locations. The system is able to track discharged patients and monitors home health units for emergency purposes.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On
"Public Access"**

"The focus of public access is the ability to secure prompt and appropriate EMS care regardless of socioeconomic status, age, or special need. For all those who contact EMS with a perceived requirement for care, the subsequent response and level of care provided must be commensurate with the situation."

◆ **Where We Are**

The further one is from an emergency medical facility, the more one may need a higher level of local EMS capability. It is also less likely that that EMS capability

will be available. Long distances, poor roads, austere terrains and extremes of climate are barriers to EMS access over which EMS planners have little control. For an increasing array of patient conditions in remote settings, chest pain for example, aeromedical resources may become the most appropriate choice. Other access barriers are attributable to remediable issues such as manpower, general financing and integration of services, and are dealt with elsewhere in this document. Below we focus on telecommunications systems barriers to access.

In rural/frontier settings, the need for residents to have telecommunication access to emergency services is more acute than in settings where fire boxes and close neighbors provide alternatives access. The 1999 U.S. Census Housing Survey indicates that 12% of rural occupied housing units to be without telephone service. Commercial systems for emergency alerting for the homebound, elderly and others ("Help, I've fallen and can't get up" systems) are growing rapidly, but are largely dependent on the availability of landline telephone systems. Other remote health monitoring capabilities are being developed but may be similarly constrained in rural/frontier areas.

In the United States at large, 93% of the population and 96% of the land is covered by Enhanced 9-1-1 hardwire (as opposed to wireless) service. Some 407 counties and tribal nations still have no 9-1-1 service, or have only a basic voice response with no automatic data on the caller's location or call back number. The Federal Communications Commission reports that while 65% of the nation's 6,000 or more emergency call centers have the ability to receive wireless 9-1-1, only 18% can determine the precise location of wireless callers to 9-1-1.

Enhanced 9-1-1 (E-9-1-1) systems could and should have the ability to identify the physical location of the source of a 9-1-1 call, but all too frequently addressing of physical locations has not been adequately done. This means that rather than assigning specific systematic and mapable addresses to every location from which a hard-wired telephone call might be received, old address information (e.g. a rural delivery route or box number) may be used, jeopardizing the effectiveness of the E-9-1-1 system.

Where cellular service is available, increasing reliance on that technology for access to emergency services is shifting the balance between calls received in this manner and calls received from hard-wired phones. Nationwide, over 30% of emergency calls to 9-1-1 centers are now made by cell phones, with that number expected to exceed 50% in 2005. This means that while E-9-1-1 is finally present in a majority of areas, it is being decreasingly used.

While initial issues of assigning cellular emergency calls from specific cell towers to specific public safety answering points have been largely resolved, adoption of technology (Wireless Enhanced 9-1-1 or WE-9-1-1) to allow a cellular caller's location to be identified has been slow despite FCC deadlines encouraging it.

Cellular service providers may elect to determine a cell phone's location by an imbedded GPS device in the phone or by triangulation among cell towers. This data is then to be passed to Public Safety Answering Points (PSAPs) along with the cell phone number identifier. Service providers have been slow to make and implement these elections despite penalties imposed, and PSAPs have been slow to implement changes to enable them to accept this data.

While cellular telephone service, and those Automatic Crash Notification services dependent on cellular service, are becoming more dependably available in rural areas, particularly along major interstate roads, their presence is less reliable or absent in frontier areas and many pockets in rural areas that are served by smaller roads and/or are blocked by topographical features.

Automatic Crash Notification systems rely on a mix of cellular and satellite communications, the latter suffering the same problems of coverage gaps as handheld cell phones. These ACN systems have already demonstrated their value particularly in isolated areas, but there remains a need for these technologies to be effectively integrated with EMS systems so that their potential may be realized.

Some areas are served by emergency call box systems. The proliferation of call box devices, and indeed funding for maintaining current call box systems, may decline because of an increasing availability of cellular and satellite technology. As the Rural Automated External Defibrillator (AED) and other programs make public access to such response resources available, some communities are publicizing their availability, while others may not.

Emergency Medical Dispatch (EMD) capability remains unavailable at many PSAPs and dispatch centers. This may delay decision-making about the dispatch of appropriate EMS resources and, therefore, the public's access to them. Further, in these areas, the public has no access to pre-arrival medical instruction, a particular difficulty where response is prolonged. In areas that have not centralized PSAP services, there may be limitations and variability in PSAP staff ability to deal effectively with foreign language callers and other issues of cultural competence. There is confusion in some areas about what specialty resources are available, such as aeromedical services, who may summon them and what their dispatch protocol is.

While enrollees of some health plans have access to health advice call centers, this is less common in rural areas where medical insurance coverage is becoming less affordable and/or available. Regardless, the integration of Emergency Medical Dispatch services and such health advice services rarely exists to effectively assure that a caller receives the appropriate type and level of care for the circumstances about which they are calling. This may result in undertriage and delay in access to needed emergency care, or overtriage with scarce EMS resources needlessly made unavailable.

◆ Where We Want To Be

All households have telephone or other direct telecommunication access to basic emergency services. Anyone with hard-wired telephone service has Enhanced 9-1-1 service that includes all physical locations reliably identified in the PSAP database and able to be usefully mapped for local responders. Wireless 9-1-1 callers can be accurately and rapidly located, and Automatic Crash Notification systems are well-integrated into EMS systems, providing the right amount of crash-related data to those in the EMS system who need it, when they need it.

All callers, regardless of the call method employed, are provided Emergency Medical Dispatch service, which quickly determines and dispatches, or connects the caller to, the right level and type of response. This EMD service is well-integrated into health event advice call-lines which serve to quickly transfer callers who require 9-1-1 response, and as a resource for those who called 9-1-1 but do not require such response. These advice lines may be operated by primary care sites (including certified rural health clinics, community health centers, private physician offices, and other ambulatory care settings), hospitals, or others, as long as they use proven health advice expert resource tools (e.g. algorithmic health advice software) and have no economic incentive to defer referral to higher levels of care. The EMD system includes a comprehensive list of specialty services, such as aeromedical, and their protocols for dispatch. The EMD system utilizes formal telephone treatment protocol and not informal “telephone aid”. All PSAPs can handle callers effectively regardless of language spoken and other cultural competency issues that may arise.

Maintenance of existing call-box systems on roadways and development of new call-box systems is carefully considered in areas where the economic incentive to develop satellite or cellular communications lags. Locations of AEDs and access to other specialty care resources are well-known to residents, and their appropriate use in the overall response to an emergency is understood.

◆ How to Get There

Local and state governments and public utilities should provide the resources that assure basic telephonic or other access to 9-1-1 emergency services and completion of Enhanced 9-1-1 systems including reliable physical location addressing. State governments, particularly their public safety and homeland security agencies, should take a leadership role in the completion of Wireless Enhanced 9-1-1 systems, including all geolocation capabilities.

State EMS directors and medical directors should take a leadership role where development of fully operational Enhanced 9-1-1 and Wireless Enhanced 9-1-1 systems lags. The patient-centered, medical leadership model may succeed where other attempts have not.

Providers of Automatic Crash Notification services should continue to involve EMS systems developers, such as state EMS directors and medical directors, in determining how, when, where, and what ACN data will be employed to best serve emergency patient needs. Explore Department of Defense and Intelligent Transportation Systems technology to improve public access to EMS.

Federal and state governments should encourage the development of, and/ or access to, health event advice call lines and their integration with PSAPs and other EMD centers. NHTSA and other agencies should continue to assure the existence of public domain EMD systems as options for PSAPs and other communications centers with limited financial resources.

All PSAP and other dispatch centers should have effective EMD systems that are well-integrated with EMS response systems to enable quick, effective decisions about appropriate type and level of medical response. They should also serve to provide pre-arrival instruction. Regionalization/centralization of PSAPs should be considered as a means of being able to reliably incorporate effective technology and EMD and to address foreign language and other cultural competency issues.

Homeland security and other federal funding for any PSAP or other dispatch center development should be contingent upon proof of the ability of that center to accept and use Enhanced and Wireless Enhanced 9-1-1 data; and to assure a system of EMD available to all callers to that center. Any funding made available to PSAPs which fall short of these capabilities should be dedicated to addressing those deficiencies as the first priority.

Federal and state highway safety officials should evaluate the utility of roadside emergency call boxes and their further deployment versus expanded ACN and cell tower deployment in areas not now reliably served by cellular services. State EMS offices should encourage appropriate public notification of the location of public access defibrillators and other public access emergency care resources and public education in their appropriate use in the overall response to an emergency.

As home health monitoring devices and automated remote diagnostic technology develop, EMS leaders should pursue roles for EMS in their use to further EMS-based community health service approaches to staffing problems in rural/frontier areas.

Recommendations

- ◆ Assure telephonic or other access to completed Enhanced 9-1-1 (i.e. including accurate physical addressing) and Wireless Enhanced 9-1-1 (i.e. with geolocation of the calling device) through effective federal and state programs, mandates and funding.

- State EMS offices should consider a patient-centered, medical leadership initiative to encourage E-9-1-1 and WE-9-1-1 system completion where other approaches have failed.
- Federal funding for state and local public safety communications development should consider progress toward E-9-1-1 and WE-9-1-1 systems completion.
- ◆ Public Safety Answering Points should manage the 9-1-1 call system efficiently and effectively without redundancy (except as created for back-up protection), and assure a coordinated response across traditional, geographical, and jurisdictional boundaries.
- ◆ Integrate Automatic Crash Notification (and other Intelligent Transportation System and Department of Defense technology) and health event advice lines into the process of EMS public access and EMS resource deployment.
- ◆ Provide formal Emergency Medical Dispatch to every caller seeking EMS.
- ◆ States should establish formal plans for roadside call-box, satellite, and/or cellular networks to effectively cover all rural/frontier primary roads.
- ◆ State EMS offices should assure appropriate integration of AEDs and other public access emergency medical device into EMS systems.
- ◆ As home health monitoring devices and automated remote diagnostic technology develop, EMS leaders should pursue roles for EMS in their use to further EMS-based community health services.

Communication Systems

October, 2009 - In addition to the EMS² computer system used by the WMAR responders to communicate and monitor resources and events regularly, they also participate in the statewide EMS Communications System. The System tracks all EMS communications at a central State Radio Communications Center 24 hours a day, 7 days a week. Trained emergency medical dispatchers route communications via land line to any telephone or radio, connecting EMS personnel with physicians or hospitals for direct on-line medical oversight. All emergency responders are trained in the use of the system through regular trainings offered through the State EMS Office.

WMAR utilizes a tiered approach to ambulance response and the use of advanced level providers. Dispatchers page out first responders, when available, to provide the quickest level of EMS response. Ambulance resources are paged out simultaneously but may take longer to respond since their bases are even further from the incident. Air ambulance services may be accessed by any EMS responder in the system and are frequently put on alert by their EMS² system when 9-1-1 calls are received that may indicate a critical care level of response and rapid transport. Dispatchers throughout the State are licensed to provide emergency medical dispatch to 9-1-1 callers, and to provide critical response information to EMS responders. Communications are assessed during monthly local quality assurance meetings at WMAR.

- ◆ *“In over 20 years of EMS I do not recall that I have ever spoken directly to a dispatcher through the radio system.”*
-- Larry D. Goldsmith, NREMT-I; Lemmon (South Dakota) Ambulance Service

- ◆ **Quote From 1996 NHTSA EMS Agenda for the Future On “Communication Systems”**

“Contemporary EMS systems and their personnel rely as heavily on their communications systems as they do on any other resource available to them. Effective communications networks provide: access to the EMS system, dispatch of EMS and other public safety agencies, coordination among EMS and other public safety agencies, access to medical oversight, communications to and between emergency health care facilities, communications between EMS and other health care providers, and outlets for disseminating information to the public.”

◆ Where We Are

Communications between those seeking EMS and dispatchers, between dispatchers and EMS responders, between EMS responders and other responders, and between EMS providers and sources of medical oversight encounter unique barriers in rural/frontier settings.

Long distances and topography interrupt communications between communications points such as public safety answering points (PSAPs), ambulance bases, and hospitals whose locations are known, and others such as callers and responders whose physical locations are often unknown or known only to themselves in the vast response area.

When EMS communications systems were developed in the early 1970's, certain Very High Frequency (VHF) and Ultra High Frequency (UHF) radio frequencies were allocated within a "Special Emergency Radio Service" designation which reserved them for EMS or other public safety purposes. Radio equipment was purchased with early EMS system development funds created by the EMS Act of 1973 (PL 93-154), and by similar era law enforcement radio systems development funds. Surveys of state EMS directors in 2000 and 2004 indicated that "communications equipment" is the greatest capital need in their rural EMS systems, and "communications" rose from the 11th most important rural EMS issue in 2000 to the 3rd most important issue in 2004.

Rural/frontier EMS and its dispatch service providers still depend on this now aging infrastructure, which includes both increasingly crowded radio frequencies and decreasingly reliable radio equipment. While more urban settings have been forced to deal with these issues and have been able to adopt new, expensive solutions, such as 700 and 800 Megahertz trunking systems, these have only in recent years become rural/frontier issues for providers who find these urban solutions financially or operationally out of reach. EMS and dispatch providers in many locations therefore have adopted ad hoc technology to supplement or replace existing technology. Examples include:

- Transition to cellular technology: particularly attractive because of its affordability, the industry's willingness to "cut good deals" or give away service to public safety agencies and the perception of added communications privacy for patient-related discussions. Yet cellular technology has proven unreliable for the same distance and topography related reasons as radio, and is subject to unavailability when a major emergency event causes system overload by those in proximity to the event.
- Transition to VHF low band: available frequencies underused in rural/frontier areas have been adopted by public safety providers. An effort by electrical service carriers to bring broadband

telecommunications to rural areas over power lines may jeopardize these low band capabilities.

Additional frequencies within the wireless communications spectrum are being created by narrowing the distances between assigned frequencies. To accomplish this, new radios capable of transmitting and receiving on those new, more narrowly separated frequencies must be employed. The FCC is encouraging this “migration” to new frequencies by setting deadlines after which older equipment can no longer be licensed. In the interim, if an FCC license holder fails to renew its license in a timely manner, it will not be allowed to relicense its older piece of equipment at all. This forces a costly purchase of a new unit which then may not be capable of communicating with other, older radios in their local system. Small rural hospitals and volunteer ambulance services may be most prone to encounter this problem because of a lack of personnel to attend to radio relicensing.

The 1996 NHTSA *EMS Agenda for the Future* reported that 14 states had statewide EMS communications plans. A 2001 National Association of State EMS Directors Survey indicated that 21 out of 32 respondent states have such a plan.

Dispatch service providers in rural/frontier areas are often law enforcement based. In the past 30 years, some practices of these providers inconsistent with modern EMS response, such as sending a sheriff patrol car to “check out” the need for an ambulance before dispatching one, have faded from the scene. But others, such as not adopting a formal emergency medical dispatch (EMD) system, alleging that it would increase complexity, liability, and need for additional personnel, remain in many areas as barriers to the effective use of EMS resources. The availability of an organized EMD capacity is particularly important in rural/frontier areas, where decisions about dispatch of appropriate resources to geographically distant scenes must be accomplished early, and pre-arrival support of callers for extended periods may be especially useful. While NHTSA has historically provided access to free materials for EMD implementation, many training and development programs available nationally are expensive.

Many rural/frontier PSAPs and dispatch centers lack automated dispatch capacity to track EMS resources, making even rudimentary system status management difficult. Rural/frontier EMS providers often do not know the status of resources that they may need until they are needed. The availability of medical first responders and other additional personnel, ALS back-up, helicopter or extrication equipment response, additional ambulances, and hospital emergency rooms may be unknown until access is attempted.

In the post-9/11 environment, efforts have accelerated to develop national and statewide alerting capacities. The ComCare Emergency provider Access Directory project seeks to create a non-proprietary device to appropriately alert responders to all nature of emergency on larger scales. The Health Alert Network

maintained by states is another system with EMS impact. The ITS America Public Safety Advisory Group published “*Recommendations for ITS Technology in Emergency Medical Services*” in 2003 which addresses the integration of emerging intelligent transportation system (ITS) technology into EMS system planning. Its content has specific potential impact for rural/frontier EMS. Nationally and on the state level, EMS is just beginning to be recognized as its own entity in communications planning and interoperability discussions.

◆ Where We Want To Be

Providers of EMS dispatch service are, or are connected to, public safety answering points that have the ability to fully use Enhanced 9-1-1 and Wireless Enhanced 9-1-1 capabilities, including caller geographic location, and are well-integrated into vehicular automatic crash notification (ACN) systems. These PSAPs and/or dispatch points have a fully operational emergency medical dispatch program that is routinely reviewed for quality improvement.

Well-integrated radio, cellular and other telecommunications systems provide robust and redundant service for both emergency and EMS-based community health service purposes. There are no communications blind spots that prevent required caller access, dispatch, inter-agency, hospital notification, or medical oversight communications. All radio equipment is forward and backward compatible and affords full interoperability among users.

Every agency or facility with an EMS responsibility has an “EMS event monitoring system” (“EMSEMS” or “EMS²”). This consists of a computer, mobile data unit (MDU), and/or personal data assistant (PDA) screen or similar technology that encompasses its general geographic area of responsibility. This screen marks and labels all EMS and related resources. Selecting an icon reveals details about the availability of those resources. The screen locates an EMS call by type (e.g. “cardiac”) as soon as the PSAP enters it into its system. Information on the type of call, patient(s) status, and disposition can be obtained by looking at, or selecting the event icon-label. The screen updates the information available about the call as new data is entered by dispatch and response personnel, or by ACN/AVL and other notification systems. Hospital staff, aeromedical responders, and other EMS resources use the screen to anticipate their involvement in an EMS event and/or to call in additional resources. Physicians providing medical oversight click on icons to get real-time patient data and EMS crew capability upon which to base their orders.

Telemedicine and electronic patient monitoring and reporting technologies fully support emergency and EMS-based community health service operations.

State and national EMS leaders are involved in all planning processes concerning communications interoperability and system development.

◆ How To Get There

State EMS offices, with federal support and local cooperation, should conduct comprehensive EMS communications needs assessments and implement programs to address changing frequency management, telecommunications technology, and aging infrastructure. Results of these assessments should guide federal, state, and local investment in communications infrastructure improvement including access to Internet, and enhanced links to telehealth for clinical care consultation and distance learning resources.

The Universal Service Program fund, which helps support telecommunications for many rural health providers, rural schools, and rural libraries, excludes EMS providers. Congress should change the authorizing language to include rural/frontier EMS access to this program.

The Federal Communications Commission, frequency allocation agencies, and other national public safety communications organizations must work to assure that rural/frontier EMS communications are enhanced and not interrupted by the process of migration to narrower bandwidths and increased numbers of frequencies. Radio spectrum should again be dedicated to EMS and other public safety use.

Innovative communications and resource management technologies, including the EMS emergency monitoring system (“EMS²”) concept, and satellite, cellular, and telemedicine should be explored by EMS leaders and supported by federal and state funders. The Health Alert Network, the ComCARE Emergency Provider Access Directory (EPAD), and other models or programs to enhance provider alerting to EMS events should all be encouraged.

State and national EMS leaders should pursue every opportunity to participate in federal (e.g. FCC, DOJ, DOC, DHS, DOT, DOD) and state (e.g. public utilities or service commissions) planning processes on communications interoperability. The federal government should encourage discussions between EMS leaders and the Department of Defense and other federal agency developers of state-of-the-art communications capabilities to explore EMS application of such technology.

Developers of Automatic Crash Notification and other intelligent transportation system technologies should continue to work with EMS leaders to promote smooth integration of these technologies into EMS systems. The ITS America Public Safety Advisory Group “*Recommendations for ITS Technology in Emergency Medical Services*” should be implemented.

Recommendations

- ◆ Conduct comprehensive state EMS communications needs assessments upon which to base federal, state, and local investment in communications infrastructure improvement.
- ◆ The Universal Service Program fund, Federal Communications Commission, frequency allocation and other national public safety communications organizations and agencies should work to assure that rural/frontier EMS communications are enhanced.
- ◆ Rededicate radio spectrum to EMS and other public safety use.
- ◆ Explore EMS applications of innovative communications and resource management technologies. Encourage federal and state agencies to provide pilot funding and access to their agencies' technology developers and resources for this purpose.
- ◆ EMS leaders should continue to develop ongoing paths of communication with state and federal telecommunications interoperability and Intelligent Transportation Systems industry planning entities.

Clinical Care and Transportation Decisions/Resources

October, 2009 - Residents of the most rural areas surrounding Chamberlain benefit from the new state policy that allows licensed paramedics to respond by private vehicle. WMAR received federal funds to purchase and trial a “sport light” aircraft for Paramedic quick response to several response areas isolated by hills, valleys and poor roads. By ground or air, these Paramedics respond with jump kits that contain controlled substances, as well as life saving supplies and equipment. This has dramatically decreased response times and improved treatment outcomes for residents and visitors requiring EMS in these remote areas.

Based on discussions between the medical director, EMS agencies, and hospitals within the collaborative network, transportation decisions have been carefully evaluated against clinical protocols, allowing any patient to receive the right level of care and transportation to the most appropriate facility. WMAR’s regular participation in monthly quality improvement reviews with its medical director and staff at Centertown Hospital, along with the Regional Trauma Advisory Committee, have led to revised prehospital treatment and transportation protocols for victims of trauma and stroke. Based on the revised protocols, WMAR may activate air ambulance intercept or bypass Centertown Hospital for speedier transport to regional trauma centers and stroke centers.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On “Clinical Care”**

“EMS provides care to those with perceived emergency needs and, when indicated, provides transportation to, from, and between health care facilities. Mobility and immediate availability to the entire population distinguish EMS from other components of the health care system.”

◆ **Where We Are**

The further a patient is from an emergency medicine facility, the more that patient may benefit from higher levels of local EMS care when “chain of survival” services are required. Paradoxically, the less likely it is that higher levels of EMS care will be available in that setting. This rural “paramedicine paradox” results because advanced levels of care are difficult to establish and maintain in systems that experience insufficient call volume to enable advanced providers to be paid and to retain their skills.

Volunteer EMS providers in low volume rural/frontier areas encounter significant barriers to providing EMT-Intermediate level and especially Paramedic level care. These include:

- Sufficient call volume to learn and retain skills and meet curriculum requirements;
- Individual volunteer availability for training, on-going education, and coverage;
- Cost of training;
- Access to training; and
- Lack of medical oversight.

Barriers also exist to the provision of paid advanced life support-- especially Paramedic-- care in rural/frontier areas. These include:

- Inadequate, volume-based, fee-for-service and reimbursement revenue to support staff;
- Traditional volunteer approach has kept local subsidization down;
- Communities don't realize that they don't have the higher level of care they might expect;
- Skill/interest retention.

Additionally, rural/ frontier residents are more likely to demand EMS services when access to other health care facilities and amenities (e.g. a hospital), traditionally accessible in urban areas, are not available. The services sought may include care, evaluation, and advice beyond their generally basic life support scope of practice. It is not unusual for a service in an isolated community to have a 30 to 50% "no transport" rate in a state that runs a 10 to 20% rate overall. It is also not unusual for members of such a service to provide episodes of informal evaluation, advice, and care that are never reflected in an EMS patient/run record.

Contributing to the rural-urban disparity in provision of EMS services, rural hospital and medical practice closures have increased, and as a result, place pressure on EMS providers to serve informally and often illegally in clinical roles for which they are not prepared. In addition there is greater call for emergency and non-emergency medical transportation to even more distant locales. Local EMS providers in many rural and frontier areas have stopped offering non-emergency transportation, such as to distant doctor's office from home and back, in order to keep EMS resources locally available for emergencies. The decrease or discontinuation of non-emergency transports is likely attributable to a noticeable increase in potentially inappropriate patient utilization.

The exact proportion of non-emergency or potentially inappropriate utilization nationally is not known, though research has shown that it is likely to affect rural EMS service provision differently than urban. Abuse and misuse of the system directly affects the bottom line of EMS systems and the immediacy by which units can respond to true emergencies. Additionally, potentially inappropriate

utilization can and does have an effect on retention of volunteer and paid personnel.

EMS system protocols, EMTALA concerns on the part of medical oversight facilities, training, and reimbursement create formal incentive to transport all patients to the hospital. This de facto “treat and transport” or “no treat if no transport” standard may unnecessarily remove EMS resources from the community when transport is done, or result in inadequate care when transport is not done. Misinterpretations by service officers that HIPAA provisions prevent components of EMS quality improvement activities serve as a barrier to these activities.

Rural hospital capacity (e.g. CCU bed unavailability) affects rural ambulance services, causing them to have to transfer patients further. CAH designations and / hospital closures cause increased pressure on EMS to transfer patients out of area.

The expense of Joint Commission on the Accreditation of Healthcare Organizations accreditation and American College of Surgeons trauma system verification may cause rural and frontier hospitals not to apply. These processes encourage hospitals to integrate themselves into regional and statewide EMS systems. Unless states offer inclusive systems of trauma and emergency care in which they may participate, the effectiveness of rural/frontier hospitals in the continuum of emergency patient care is jeopardized.

Further complicating the provision of rural and frontier EMS care is inadequate physician-driven medical oversight and quality review in rural/frontier settings. A significant amount of work is still needed in the area of infrastructure stability, rural-frontier scope of practice, oversight and regulation, and medical oversight in order to bring rural and frontier EMS systems of care to a more satisfactory level of out-of-hospital emergency care.

Another practice which may enhance the provision of ALS, but which is of questionable legal standing in some states, is the carrying of controlled substances by individual Paramedics or other providers in their own vehicles. The U.S. Drug Enforcement Agency permits this only in “wilderness” areas where the state has policies in place outlining its implementation. Some states, such as West Virginia, have facilitated this practice, while many states have yet to address it.

◆ Where We Want To Be

There is a process in place to allow communities to make informed decisions about the type and level of EMS response they desire and the amount of governmental subsidy to be invested. They are guided by state and national standards for EMS, which promote access to advanced levels of care in rural/frontier areas, and by objective, outside evaluation of their EMS capabilities. States give planning consideration to remote/satellite helicopter bases to reduce

the time until definitive care and reduce the time until arrival of critical care providers at the bedside, as an alternative to attempting proliferation of ALS providers at all rural/frontier EMS services.

Health care transportation systems are subject to the same community planning and decision-making as EMS response itself, and afford a seamless, well-coordinated set of services that match need to type of transport resource. States effectively plan and regulate the availability and use of expensive transportation and care resources such as helicopters and critical care transport systems. Formal “auto-dispatch” criteria have been considered that allow simultaneous dispatch of helicopter EMS and ground EMS in areas with prolonged ground response times. Alternative transportation models are explored for providing effective regionally-based ALS intercept. “Jump medics” or ultralight/sport aircraft may provide solutions to ground distance and helicopter expense barriers.

EMS providers at the basic and advanced levels receive supplemental training, medical oversight, and reimbursement to formalize the EMS-based community health service types of patient evaluation, care and advice service that they had previously offered on an informal basis. With local and regional public health, medical, social service, behavioral health and EMS authorities, they explore new preventive, rehabilitation and primary care services to provide. In these capacities, in rural hospitals and health centers and out in the community, both basic and advanced providers use their skills routinely so that they are prepared to employ them on emergency calls. These services are so valued that they provide adequate patient billing, reimbursement, and /or local subsidy to support an advanced level EMS response presence on a full-time basis.

Rural/frontier EMS providers are trained, authorized, and work closely with medical oversight to make triage, treatment and transport decisions that make effective use of local resources and assure a disposition in the patient’s best interest. Urban-based aeromedical, critical care transport and other ALS response resources are integrated into decisions about patient transportation and the use of local resources. Rural and frontier services are supported by state policy in their systems for deploying controlled substances to patients who require them in a rapid and safe manner.

Paid basic and advanced life support staff in the EMS-based community health service roles work well with their volunteer colleagues to maintain a depth of service that can expand to respond to a variety of EMS emergencies. There are well-articulated mutual aid plans, and states have EMS compacts allowing cross-border response and mutual assistance.

Medical oversight is provided for both EMS emergency response and EMS-based community health service activities, either by a single source or by a well-coordinated dual source system.

The Rural EMS and Trauma Technical Assistance Center serves as a valuable resource on rural/frontier EMS system development, successful practices, community EMS evaluation, service management, and provides technical assistance for rural/frontier EMS providers to deal with the variety of federal laws and regulations that impact them (e.g. EMTALA, HIPAA). Health care providers/entities have a working knowledge of HIPAA and recognize that protected health care information can be shared for QI/PI purposes in accordance with HIPAA.

State EMS offices and other health care leaders and providers assure statewide, “inclusive” systems of emergency care. As opposed to “exclusive” systems in which only specialty centers (e.g. nationally accredited trauma or stroke centers) have defined roles, inclusive systems define roles and expectations for all acute care hospitals offering any level of emergency care for those conditions.

◆ How To Get There

Congress should fund pilot and demonstration EMS-based community health service and transportation alternative projects (e.g. jump-medic, ultralight/sport aircraft ALS personnel delivery) for increased community access to primary care and basic and advanced life support services in medically underserved areas. These should include demonstration projects to assist EMTs in maintaining competence in practical EMT skills; expand EMT skill bases; and explore expanded scopes of practices. Federal transportation funds should be used to develop and support EMS infrastructure where there is a high frequency of motor vehicle crashes requiring EMS response.

The national model for easily transferable processes for community EMS system assessment and informed self-determination (recommended in the section on Public Information, Education and Relations) should include consideration of the systems of medical transportation available as well.

States, however, should define a minimum type and level of EMS to be provided to all communities including equipment standards, and should actively plan and regulate aeromedical, critical care transport, and other major systems of specialty care and transportation. States with multiple air ambulances should work with air ambulance providers to assure they are deployed geographically according to patient pick-up need instead of being based at destination facilities.

States should facilitate EMS-based community health service programs by making statutory changes or otherwise enabling EMS licensees to legally practice current and expanded scope skills in non-EMS settings. Similar provisions should be made for nurses and other health care professionals to easily participate in local EMS care. State EMS leaders should meet with their public health counterparts to consider local EMS roles public health functions such as

administering immunizations, conducting screenings, and offering public health education

States should develop policy and procedures to facilitate the provision of controlled substances by rural and frontier EMS providers to those emergency patients needing them which support the response patterns of those providers.

State EMS leaders should plan and implement inclusive systems of trauma and other emergency care which define the roles of rural/frontier hospitals in collaboration with key stakeholders.

Recommendations

- ◆ The national model for community EMS system assessment and informed self-determination (recommended in the section on Public Information, Education and Relations) should include systems and sources of local medical transportation.
- ◆ Define and require a statewide minimum type and level of EMS to be provided to all communities including equipment and clinical care standards. Fund services which demonstrate a reasonable inability to comply with minimum standards to enable compliance. Community EMS system assessments, and CMS and third-party payers, should utilize these state standards.
- ◆ Plan, integrate and regulate, at the state level, aeromedical, critical care transport, and other statewide or regionwide systems of specialty care and transportation. Consider the evolving role of telehealth resources and their application to EMS patient management and medical oversight.
- ◆ Improve community access to health care and advanced levels of EMS by creating mechanisms for EMS personnel to participate in EMS-based community health services, non-EMS personnel to participate in EMS care, and by exploring and integrating new roles and scopes of practice for all available providers.
- ◆ Create a statewide policy governing the use of controlled substances, devices, and procedures in rural/frontier settings for EMS responders in private vehicles.
- ◆ Facilitate a state-level process, guided by an appropriate multi-disciplinary committee, to ensure inclusive systems of trauma and other time-critical emergency care which define the roles of rural/frontier hospitals. Create a guide to assist these system development processes.
- ◆ Fund pilot EMS-based community health services, transportation and other alternative ALS delivery methods, and projects to support improved EMS infrastructure in rural/frontier areas where data demonstrate a particular unmet need.

Information Systems

October, 2009 - Western Mountains Ambulance and Rescue's (WMAR) data collection process has greatly improved since the merger of tribal EMS and Chamberlain Ambulance. The Rural EMS and Trauma Technical Assistance Center (REMSTTAC) supported the service chief's efforts to develop and implement a new data collection system by linking WMAR to other available systems and successful practices. WMAR received state and federal grant funds to purchase computer hardware and software that enables their medics to collect patient care data quickly and accurately. Medics now electronically submit patient care data to their State EMS office, link to their web-based billing and quality improvement systems and retrieve aggregate data reports to effectively manage their resources. The data is linked locally, with other health and safety stakeholder agencies in the Chamberlain area, and nationally to Federal EMS Office.

Through the National EMS Information System (NEMSIS), WMAR can evaluate their system performance based on a well-defined set of criteria listed in the national "Guide to Performance Measures". Their ability to compare their agency's performance to similar agencies throughout the country led to changes in agency protocols and training. WMAR is now able to implement program changes and improvements based on patient data and outcomes.

◆ *Illustrative quote*

◆ **Quote From 1996 NHTSA EMS Agenda for the Future On "Information Systems"**

"The raw material for information is data. Information systems collect and arrange data to service particular purposes."

◆ **Where We Are**

Systems for the collection of EMS system operational and clinical data have been in existence, in many forms, for many years. Some states have never had a statewide, centralized data collection system or universal patient/run record. A number of states have collected but not processed patient/run records. Yet others have had a statewide, paper-based centralized data system for years but have yet to establish a statewide electronic system. Some states are now going from little or no system to an electronic system statewide.

Rural/frontier EMS provider services, especially those dependent heavily or solely upon volunteers, may barely have sufficient manpower available to provide paper patient/run records to statewide systems. They generally do not collect data locally, and where they do, those efforts are often driven by software availability and are not connected to statewide data collection systems. Tribal EMS providers in some areas may not integrate with state data collection efforts as a result of sovereignty issues.

Many states have trauma, burn, head injury, and other registries on regional or statewide bases. Some registries use EMS system data, while others gather prehospital information from other sources, which may be a duplication of effort.

In 1993, a consensus conference produced the NHTSA “EMS Uniform Prehospital Dataset”, a set of defined data elements recommended for inclusion in state EMS data systems. In 2003, “Version 2” of the Dataset was released as an industry consensus document, as part of a broader National EMS Information System (NEMSIS) project. This update provided a much larger universe of data elements to which definitions were assigned. It suggested a common dataset to be collected at the national level, but as importantly provides a resource from which EMS system managers may draw definitions for data elements. In a National Association of State EMS Directors 2003 resolution, 45 states and territories have agreed “to promote and support all EMS data initiatives within their states to conform in the future to the national dataset definitions”.

In 2004, NHTSA is pursuing a “Performance Measures” project targeted at developing a universe of EMS systems performance questions defined using the “Version 2 Dataset” definitions. The resulting “Guide to Performance Measures” is to be released in 2005.

The “Version 2.0 Dataset” and the NASEMSD resolution may make it easier for software vendors to assist in making local data collection systems more attainable. The Dataset and the Guide to Performance Measures will further comparability of data, measurement methods, and benchmarking. But all of these are just components of an anticipated nationwide EMS data collection information system – NEMSIS. The NEMSIS project has proposed a business model framework to establish state and national level data aggregation and reporting systems built upon facilitated local data collection.

A discrete emergency medical or other health event often cannot be tracked from onset through rehabilitation because linkages among the data collected at the various points of care do not exist. This makes outcome measurement difficult or impossible and jeopardizes system improvement efforts. Lack of integration of patient medical record technology across the overall health network can result in care being provided without benefit of a complete patient history.

State EMS offices have personnel and agency licensing/certification responsibilities that require information systems support. These systems are not always adequate to support the needs of license/certificate holders or EMS office staff. These systems are often not integrated with EMS patient/run record data systems despite the potential for such integration to be valuable from a performance improvement and licensing/certification perspective.

Rural and frontier states are limited in their ability to participate in the collection of outcomes data and in real-time surveillance monitoring because of the sparse population, and cost associated with data collection and monitoring of widely scattered, low-frequency events. However, in some states where electronic data collection systems have been developed, rural and frontier providers, when given the required technology, have proven to adapt as easily to those systems as their urban counterparts.

The need for valid, reliable data which is universally comparable is evident at every level of EMS system development and operation. It is necessary to every activity from patient care to performance improvement to research. All of the components of this Agenda are dependent on data. The success in the implementation and measurement of the progress associated with the Agenda will be dependent on data and information systems.

◆ **Where We Want To Be**

The National EMS Information System (NEMSIS) is fully implemented, and useful EMS data resides and is used at local, state and national levels. State EMS offices have adequate personnel and agency licensing/certification information systems support. These systems are well integrated with EMS patient/run record data systems and are routinely used for system performance improvement. EMS services and hospitals, regardless of size or location, are linked to the local-state-national data flow in both directions, being able to provide data from operations and to use data pooled at higher levels in a real time, or otherwise timely as appropriate to function, fashion. Even the smallest EMS provider service has an electronic connection to the statewide and, therefore, national databases for submitting and utilizing data. Data is used to define and measure system and clinical care issues. Its importance is universally respected as the foundation of all evaluation and research which provide evolutionary direction for every component of the EMS system. Communications and data systems are integrated as one, and are linked to medical devices.

Trauma and other specialty registries in all states use EMS data and link well to EMS data collection systems to reduce duplication of efforts. An emergency medical or other health event can be accurately described from onset through rehabilitation by the data that are collected and integrated from the various points of care. A patient's care by one provider at a point in the overall network of health care benefits from data collected about that patient's care through time at other

points in the network. Sovereignty issues are overcome to incorporate tribal EMS providers into statewide data collection and information systems to enhance system operations performance improvement and system development.

The agency or organization operating NEMSIS, the Rural EMS and Trauma Technical Assistance Center, and other resources are available to facilitate data collection by offering assistance to states and EMS providers with issues such as HIPAA compliance.

All data is consistent with the NHTSA 2.0, or subsequent consensus-based version, Uniform EMS Prehospital Dataset. EMS system performance measurement at local, state and national levels uses measures defined in the NHTSA “Guide to Performance Measures” which is linked to the Uniform Prehospital Dataset definitions.

Multi-system data collection or data aggregation is commonly conducted to generate adequate call volume data to answer specific rural/frontier EMS clinical and operational questions. Systems to effectively conduct surveillance in rural/frontier areas have been established.

◆ How To Get There

Congress should fund the NEMSIS business model and offer grant funding through state EMS offices to local EMS provider services to establish a nationwide system of EMS data collection. State EMS offices and local EMS providers should be enabled to acquire software, hardware, and training in their use, that is not only compatible with the state and national data collection efforts, but which provides meaningful information on local, regional and statewide system performance. State EMS data systems should integrate with licensure/certification programs.

NEMSIS should encourage states to link or otherwise integrate medical information technology, such as the various types of medical records and registries, to facilitate communication among providers and tracking of emergency medical and other health events across the health network continuum from onset through rehabilitation. States should be encouraged to initiate a data-integration dialogue with tribal EMS providers with foreknowledge of and respect for sovereignty issues with regard to data sharing.

NHTSA should be funded to support on-going review and consensus-based updating of the Uniform Prehospital Dataset and of the “Guide to Performance Measures”. The “Guide to Performance Measures” should include consideration of performance evaluation and research questions which are particularly pertinent to rural/frontier systems. An effective document should be developed for state officials to utilize in promoting the benefits of adequate data system funding to legislators and other decision-makers.

NEMSIS and the Rural EMS and Trauma Technical Assistance Center program should receive continued federal funding, and should have as one of its charges to support local EMS data collection efforts. HIPAA compliance and other issues which serve as barriers to effective local participation in data collection should be addressed.

Multi-system data collection and aggregation relationships should be formally encouraged by federal and state grant sources, with their focus on specific rural/frontier EMS clinical and operational performance improvement and research questions. The CDC and other agencies should develop systems of health surveillance monitoring that are appropriate to rural and frontier settings.

Recommendations

- ◆ Fund and implement the National EMS Information System (NEMSIS) to assure smooth, universal data flow from the local through national levels. Facilitate local EMS data collection and information system development.
 - Implement EMS information systems to provide for the aggregation of EMS data among systems at the local, regional, state, and national levels.
 - Implement and maintain a statewide EMS information system in every state. Maintain data on every EMS event in the state in a manner which is timely and of value to local and state EMS agencies.
 - Implement and maintain a local EMS information system at every local EMS service/agency. Maintain data on every EMS event in a manner which is timely and able to drive the quality of the EMS system service and patient care delivery.
 - As needed, share costs and resources required to implement and maintain an EMS information system among multiple systems to achieve an economy of scale.
 - Reflect the development and sophistication of each EMS system in the implementation of its EMS information system. The complexity of equipment and technology used by the EMS information system should be congruent with personnel, education, training, and capability of the EMS system.
 - EMS systems must provide analyzed and descriptive information on the service and patient care delivery which they provide to their EMS personnel, administration, and community.
 - Include the importance, need, and use of EMS service delivery and patient care data in the educational curriculums and continuing educational programs for EMS providers, administrators, and medical directors.

- Assure a NHTSA or lead federal EMS agency mechanism for the support and every three to five year review of the Uniform EMS Prehospital Dataset, the Guide to Performance Measures and other components important to the NEMSIS effort.
- Link/integrate EMS data systems with other relevant health information systems at all levels such as public health surveillance, crash, medical examiner, hospital discharge, and emergency department, including CDC surveillance monitoring systems.
- Provide technical assistance for local EMS provider data system development through federal/state agency and professional EMS organization coordination.
- Encourage multi-system data collection for specific research and performance improvement purposes.

Evaluation

October, 2009 - In the months following the merger, Western Mountains Ambulance and Rescue (WMAR) administrators participated in EMS-specific quality improvement and leadership courses. These courses were federally funded and offered by their State EMS office. The coursework provided agency administrators with the tools necessary to implement measures that continually assess agency and provider performance. WMAR leaders, through the regional network's QI service, now use data to assess training needs, provide feedback, and evaluate performance. Their on-going efforts to assess and improve their quality of care resulted in remarkable community support. Chamberlain area residents, and agency personnel, recognize and appreciate the significant improvements that have occurred since the town council chairman's death just three years ago. Using performance templates provided by NEDARC, augmented with benchmark measures selected from the national "Guide to Performance Measures", these improvements have been documented in an annual system report produced and distributed to key representatives by WMAR.

♦ *Illustrative quote*

♦ **Quote From 1996 NHTSA EMS Agenda for the Future On "Evaluation"**

"Evaluation is the essential process of assessing the quality and effects of EMS, so that strategies for continuous improvement can be designed and implemented."

♦ **Where We Are**

When modern EMS was born as a system in the EMS System Act of 1973 (PL 93-154), it was intrinsic that review and evaluation be conducted to assure that the system was performing as intended. Early on, this took the form of quality assurance reviews of operational and clinical performance (typically reviews of patient/run records with or without specific criteria for comparison) within services or by agents of those with medical oversight/certification authority. More recently, contemporary practices of quality and performance improvement have been successfully applied in EMS systems.

The National Highway Traffic Safety Administration has supported several projects encouraging EMS system evaluation. In 1997, it produced the "Leadership Guide to Quality Improvement for Emergency Medical Services Systems" and funded its dissemination nationwide through orientation programs. More recently, work on EMS outcomes and the "value of EMS" have been or are being supported. NHTSA is currently supporting a project to develop a "Guide to Performance Measures" which will contain a universe of local, state, and national

system performance questions linked to specific data definitions as contained in the NHTSA 2.0 Uniform Prehospital Dataset.

In recent years a national association of EMS quality managers was formed, and then reformed as a more broadly based National EMS Management Association, with its own quality-improvement focused journal. In addition, the Open Source EMS Initiative (OSEMSI) provides a unique, on-going method of developing EMS system performance indicators which is accessible to the EMS community at large. The Medicare program's development of Quality Improvement Organizations (QIOs) has potential for benefit in EMS, though their focus is determined by CMS.

Despite the improved sophistication of EMS system evaluation in general, rural and frontier areas lag in applying these methodologies because of an absolute or relative lack of the human resources and/or computer technology to do so. Where individual EMS service chiefs or other service members may have a specific interest, service management software may be purchased and employed which provides service performance information. This is more the exception than the rule in rural/frontier areas, however, because of the expense to acquire such capacity and the human resources needed to maintain and operate it. Evaluation is generally hampered by the lack of integrated data systems that can track patients from incident to definitive care and rehabilitation and that are linked to statewide and national databases.

Nor is there a common set of community-level EMS system performance benchmarks which might provide incentive to collect data to make comparisons for evaluation purposes. Even quality assurance review mechanisms, where they occur, tend to vary from service to service, or hospital to hospital, and rarely involve all system participants and levels of care. The perceived need to scrutinize performance at or below the Basic EMT level (the level at which many rural/frontier services operate) from a system medical oversight perspective varies. As a result, rural/frontier services and their staff, service/regional medical directors where they exist, and the public served have little other than anecdotal basis for understanding a particular EMS provider's competence or for improving a local system's performance.

A specific issue in this regard, is the absence of generally accepted standards for clinical and psychomotor skill competency and competency assessment as an integral part of an overall performance measurement system. Instead, most EMS systems rely on tally counts or "bean counts" (e.g. "number of 'successful' IV attempts") as markers for competency. Using this methodology, competency in endotracheal intubation could be indicated by performance of a certain number of successful field intubations over a defined period of time. For rural/frontier EMS medical directors, this type of "bean" is impractical due to low patient call volume. An often used substitute "bean", the operating room (OR) intubation, is also impractical because of OR access and other reasons in the rural/frontier

setting. In addition, the OR intubation as well as another substitute “bean”, the mannequin intubation, are not clearly associated with successful advanced airway management in the low volume, un-controlled, out-of-hospital arena.

The inability of rural/frontier EMS to identify and validate objective and measurable evidence-based skills and other performance criteria, which may or may not include tally or “bean” counts, makes it difficult to address such important issues as skills retention and retraining.

As pressure increases to pilot EMS-based community health service or other emergency care practices with special relevance to rural/frontier settings, so too will the need to have ongoing systems of evaluation of these services and practices.

◆ Where We Want To Be

Quality assurance and performance improvement is facilitated by the presence of integrated data systems that can track patients from emergency medical event through rehabilitation. As a part of these data systems, even the smallest EMS provider service has automated, electronic service and personnel performance evaluation tools that are easy to use and well supported by technical assistance.

System and service administrators and medical directors are trained to employ, and are provided with, quality management toolkits with which to approach decisions about system changes. Tools such as the NHTSA “Leadership Guide to Quality Improvement for Emergency Medical Services Systems” are adopted at service and larger system levels, and are included in service management training programs and other venues. States provide “quality assurance tool kits” to provider agencies. The NHTSA “Guide to Performance Measures” is widely employed to assist those designing service and system benchmarking plans. A nationally accepted process and/or qualified organization is utilized on an on-going basis to update the “Guide to Performance Measures” and the application of performance indicators.

All EMS-based community health service and expanded scope emergency medical practices are piloted and evaluated under medical oversight.

The agency or organization operating NEMSIS, the Rural EMS and Trauma Technical Assistance Center, CMS QIOs, the National EMSC Data Analysis Resource Center and other resources are widely used by local EMS staff in establishing quality improvement systems.

Clinical and psychomotor skill competency is assessed using validated performance criteria in a robust system of quality and performance improvement. Skills retention and retraining issues are addressed using these criteria.

◆ **How To Get There**

The preceding chapter contained recommendations for establishing wall-to-wall EMS data collection systems in the US by funding NEMSIS and by making grants available through state EMS offices for the purchase of software, hardware and training. In the latter programs, software purchased under this program should provide turn-key, easy to use tools for service-level performance improvement/quality assurance processes.

Federal EMS programs should encourage states to create and facilitate quality improvement training and the development and dissemination of EMS quality improvement toolkits. CMS should direct QIOs to serve as resources for EMS provider agencies. The NHTSA Guide to Performance Measures should be supported and reviewed by NHTSA on an on-going basis.

National education and training, certification, and EMS management associations and other qualified organizations should be funded to develop evidence-based competency criteria and to research volume-based skills retention issues.

State EMS offices should take leadership roles in facilitating or requiring all system and service administrators and medical directors to employ performance improvement tools in a systematic fashion.

Where state and federal agencies are involved in authorizing and/or funding EMS-based community health service or emergency medical expanded scopes of practice pilots or programs, they should require a system for evaluation directed by a physician, or by another health practitioner reporting to a physician.

Recommendations

- ◆ Federal and state funds should be made available to support the development and implementation of state EMS evaluation activities.
- ◆ Fund the availability of training and toolkits to encourage effective local service/system quality improvement processes.
- ◆ Assure a mechanism for the on-going support and review of the NHTSA “Guide to Performance Measures” and “Leadership Guide to Quality Improvement for Emergency Medical Services Systems” and encourage their use in services and systems.
- ◆ Encourage the development of evidence-based competency criteria.
- ◆ EMS-based community health services pilots and programs should have a physician-supervised evaluation system.

Appendices

Appendix A - Development of the Agenda

The *EMS Agenda for the Future*, published by NHTSA in 1996, has served as a visionary tool for EMS system planners across the nation as they guide their systems in changing and growing. More importantly and unlike any other document, except the original federal EMS Systems Act of 1973, it has had a profound impact on policy-making and funds allocation in EMS on all levels.

Since 1996, other spin-off EMS "agendas" in education, research, and trauma have furthered the spirit and concepts of the original *EMS Agenda for the Future*. These also have had their concepts embraced in federally-funded projects and promise to similarly impact the EMS field.

There have been a number of important works addressing the needs of rural/frontier EMS (for instance, NRHA's "*Rural And Frontier EMS Toward The Year 2000*"). Regardless, there has been little overall vision established for rural/frontier EMS in the policy-making and funding arenas that shape tomorrow. To create the best opportunity to accomplish this, the National Rural Health Association, the National Association of State EMS Directors, the National Organization of State Offices of Rural Health, and the federal Office of Rural Health Policy, decided to pursue a national consensus document in the rural health and EMS communities following the *EMS Agenda for the Future* process and format.

The Rural/Frontier EMS Agenda for the Future, endeavors to similarly define need and create priority for attention for EMS systems in America's vast spaces not found in urban/suburban centers. It does not attempt to recreate the *EMS Agenda for the Future*, but builds upon its foundation and notes variances from it made necessary by the realities of rural and frontier life.

A steering committee and a separate editorial board of rural health and EMS experts guided a principal author/investigator. Many volunteers contributed written pieces, input, copy editing, and data entry.

All major national EMS and rural health agencies, associations, and other organizations were contacted directly for input on the development of this document and for review of drafts as they evolved. Media-announced internet postings of four progressively more

Draft 4.0 7/26/04

refined drafts over a period of eight months, allowed the rural health and EMS communities to provide input. A day-long review in March, 2004 at the annual NRHA meeting allowed additional input.

The *Rural/Frontier EMS Agenda* was rolled out at the NASEMSD annual meeting in Park City, Utah in October, 2004.

Appendix B - Summary of Recommendations

Integration of Health Services

- ◆ Encourage EMS-based community health service program development through the funding of pilots, cataloguing of existing successful practices, exploration of opportunities for expanded EMS scopes of practice, and on-going reimbursement for the provision of such services.
- ◆ Federal and state incentives should exist for participation in EMS-based health care services and for other forms of EMS integration with the greater health system, public safety services, academic centers, and the community at large.
- ◆ Establish statewide rural/frontier health care committees which include EMS.
- ◆ Federal, state and local programs addressing all-hazards planning, and addressing the specific needs of special rural populations should include EMS as a categorical component. Establish statewide and border-state networks of formal regional EMS mutual aid agreements including EMS licensee recognition.
- ◆ The Indian Health Service should integrate tribal EMS-based community health service and Community Health Representative programming and consider the use of both tribal and non-tribal sources of care.

Research

- ◆ Fund and implement the recommendations of the NHTSA “EMS Research Agenda for the Future” but address the following needs and challenges of rural/frontier EMS systems research:
 1. No less than two of the five national EMS research centers (NEMSCRs) named and funded have rural/frontier EMS research missions and qualifications;
 2. Both of the additional national centers for the coordination of multi-center research (NCCMCRs) have missions, in part, and a specific percentage of their projects, dedicated to rural/frontier EMS;
 3. All these centers with rural/frontier EMS research missions coordinate their rural/frontier activities with one another and with other national resources including the National EMSC Data

Analysis Resource Center (NEDARC), the agency operating the National EMS Information System (NEMSIS), the rural health research center network, the Rural EMS and Trauma Technical Assistance Center (REMSTTAC), and state EMS offices and offices of rural health;

4. These centers with rural/frontier EMS research missions specifically address the role of EMS-based community health care and prevention, service regionalization, alternative modes of ALS intercept, appropriate local-county-state-federal mixes of rural/frontier EMS system funding, and other models to preserve and develop the BLS/ALS safety net in rural/frontier areas;
 5. These centers with rural/frontier EMS research missions address the roles of CAHs, the use of aeromedical and other major systems and technology, the application of clinical/operational practices specific to delayed transport settings, the impact of skills retention on performance, and other clinical/operational practices relevant to rural/frontier EMS;
 6. Availability of research methodology training opportunities is expanded to candidates with bachelor's and master's degrees, particularly those with on-going, first-hand involvement in the clinical operations of rural/frontier EMS systems;
 7. There is a well-identified set of resources among these centers and other agencies or organizations that offer materials, training and advice in basic research methodology for EMS system participants. These resources are well-communicated through every state and regional EMS system structure to all service providers. These centers pursue bringing researchers and service providers closer together to understand what they stand to gain from collaborating with each other; and
 8. One or more of these centers is charged with encouraging the formation of state-level EMS research committees, consisting of EMS medical directors, field professionals (volunteer and paid EMTs, Paramedics, and service managers), and researchers. These committees, affiliated with the state EMS office, would consider the need for and methods of research and evaluation projects from both practical application and research perspectives, and promote opportunities for needed research.
- ◆ Make rural and frontier EMS systems research an eligible category of application for all rural, medicine, and health related federal grant program offerings.
 - ◆ Existing federally funded rural health research centers, academic departments with rural and EMS interests, rural EMS fellowship programs, and other research-related entities should engage in EMS research. Integrate these entities into the proposed network of rural/frontier EMS research centers.

- ◆ Encourage non-governmental funding sources, such as foundations, to provide leadership and resources in rural/frontier EMS research efforts (e.g. Robert Wood Johnson).
- ◆ Make data that are collected through information systems at state and federal levels available for community based assessment and research, and provide tools to promote community-based research.

Legislation and Regulation

- ◆ Authorize and fund a restructured Federal Interagency Committee on EMS to coordinate and formalize the network of existing and new agencies with federal EMS responsibility and provide national leadership.
- ◆ Fund FICEMS adequately to continue the current/planned activities of the agencies it coordinates.
- ◆ Create within ORHP, and coordinated by FICEMS, a dedicated, ongoing rural/frontier staff and focus. Create a FICEMS advisory board with rural/frontier representation.
- ◆ Adequately fund the state EMS lead agency to enable it to carry out its designated responsibilities.
- ◆ Create funding incentives and legislation models to help state EMS lead agencies acquire sufficient legal basis, authority, resources and leadership to broadly develop and implement EMS systems on an ongoing basis and to provide sufficient flexibility to adapt to the unique needs of rural/frontier EMS.
- ◆ Assure that state EMS lead agency advisory boards are representative of rural/frontier EMS interests.
- ◆ Create the opportunity for the development of state-level public policy to delineate the roles, support and treatment of EMS volunteers, while fulfilling public expectation on level and type of EMS provided. Give state EMS agencies the flexibility to effectively implement these policies.
- ◆ The EMS interface between tribal sovereign nation status and state government regulation and coordination of EMS should be addressed by each state and tribal government. An interface between Alaskan Native/American Indian sovereign nations and state government coordination of EMS should be generated by the lead federal agency in collaboration with appropriate tribal leadership agencies.

System Finance

- ◆ Authorize and appropriate sufficient funds for CMS (Medicare and Medicaid) to reimburse EMS providers based on the per-call cost of maintaining full-time response with specific recognition of the increased cost of doing so in rural/frontier areas. Third party payers must also recognize the increased cost of rural/frontier ambulance service.
- ◆ Implement the following federal reimbursement reforms for emergency and interfacility EMS clinical care and operations:

- Call-components performed by first-response, ALS intercept, ambulance and other EMS response agencies which should be eligible for reimbursement, not duplicated on any given call, should include emergency response, assessment, treatment, triage and transportation or other disposition that may, or may not, involve traditional transportation.
- Retrospective review of medical necessity should not be done for emergency response calls.
- Immediately implement the patient condition codes model from the Negotiated Rule-Making process.
- Remove the “35 mile” restriction on cost-based reimbursement for EMS agencies that are owned and operated by Critical Access Hospitals.
- Employ definitions of “access” and “rural” (and its degrees) in reimbursement, such as those presented in Appendix J, which will help to maintain an adequate rural/frontier EMS infrastructure.
- Consider a “critical access ambulance service” definition or other means to assure a minimal level of EMS infrastructure in all geographic areas.
- Assure that interfacility transports that are “appropriate” from an EMTALA perspective are fairly reimbursed and not subjected to retrospective medical necessity determinations.
- Adopt reimbursement practices that encourage patient treatment and recovery at the facility closest to the patient’s home that is desired by the patient and capable of providing the care required at the given stage of recovery.
- Facilitate the use of subscription services as a part of the overall funding of the EMS safety net infrastructure, in cooperation with state insurance authorities.
- Consider a single fiscal intermediary for all EMS providers, and develop a “successful practice” guide to assist EMS providers in maximizing billing efficiency and accuracy.
- ◆ Make federal and state domestic preparedness and response funding programs such as those of the Department of Homeland Security, CDC, HRSA, and ODP available explicitly and categorically to EMS systems and providers including private and for-profit agencies.
- ◆ CMS, MCOs and other third-party payers should fund EMS-based community health care pilot projects and define EMS personnel as reimbursement-eligible care-providers under physician medical oversight for primary care, prevention, and other services they render.
- ◆ Form, and fund through county, regional, state or federal tax dollars, rural/frontier EMS operational or service-contracting networks in those areas where they provide economies of scale, improved access to EMS care, improved quality and/or increased tax payer value.

Human Resources

- ◆ Extend federal and state rural and health manpower recruitment and retention planning leadership, technical assistance and funding specifically and categorically to rural/frontier/tribal EMS and implemented through state EMS offices, state offices of rural health or other appropriate entities.
- ◆ Analyze, at the state EMS agency level, rural/frontier workforce recruitment and retention efforts and develop statewide plans for improvement.
- ◆ Establish incentive programs to recruit and retain rural/frontier EMS human resources.
- ◆ Foster the development of a culture of volunteerism and community service through local schools in partnership with community agencies.
- ◆ A national EMS service leadership and service management training model should be developed and shared with all state, territorial and tribal governments. This model should include successful practices in EMS volunteer and paid human resources management.
- ◆ Target occupational safety in EMS for research funding and the development of guidance materials.
- ◆ The REMSTTAC should maintain and disseminate successful practices in implementing components of the national EMS service leadership and service management training model.

Medical Oversight

- ◆ Establish statewide networks of EMS medical oversight, including medical directors at the local, regional, and state levels as appropriate in a given state to ensure the provision of EMS medical oversight for every EMS service.
 - Implement at least one full time equivalent position of state EMS medical director in every state with a job description as defined by consensus of EMS-related professional medical and state EMS director organizations.
 - Compensate EMS medical directors for the EMS medical oversight services which are provided. The level of compensation should be equivalent to the level of compensation the physician would experience (for the equivalent hours) in their normal clinical practice.
 - Require that EMS medical directors be physicians, but encourage the use of physician extenders and regionalized arrangements of medical oversight to increase the EMS medical oversight resources in rural/frontier areas.
 - EMS medical directors must actively participate in local, regional, and state EMS program planning and implementation. States must seek out and include rural/frontier medical directors for these purposes.

- Implement EMS based community health programs and services through an interdisciplinary approach involving EMS operational and medical oversight components and primary care professionals.
- ◆ Assure federal and state funding resources to maintain these statewide networks of medical oversight.
 - States must assure funding of the state EMS medical director.
 - System/provider reimbursement should be based on the cost for providing EMS services and patient care delivery. The cost associated with trained and qualified EMS medical oversight should be included in this cost basis.
 - Federal programs which provide financial incentives to physicians serving in rural areas (underserved and hospital based programs, e.g. Critical Access Hospital program) should require involvement in the local EMS system. If the EMS system is without medical oversight, these physicians should be required to provide this service.
 - Federal agencies and professional EMS organizations should provide and maintain technical assistance resources for EMS medical oversight.
- ◆ Prepare and protect rural/frontier emergency and primary care physicians to serve as EMS medical directors and assure adequate systems of performance improvement to support their activities.
 - Legislate, at the state level, peer review protection for EMS system quality management and performance improvement initiatives to exist without fear of discovery and litigation.
 - Assure liability coverage for EMS medical oversight to be included in the normal liability coverage for primary care and emergency medicine physicians. This coverage should provide protection for both the clinical and administrative duties associated with EMS medical oversight.
 - Review all existing EMS medical oversight courses and establish a Rural/Frontier EMS Medical Directors Course which should be made available and distributed through multiple mechanisms to allow maximum access by EMS medical directors.
 - EMS medical oversight must be introduced in medical schools and included in the curriculums of primary care residency programs (both MD and DO degree-granting institutions).

Education Systems

- ◆ Address, as part of the development and implementation process for the *Emergency Medical Services Education Agenda for the Future: A Systems Approach*, the unique needs of rural/frontier practice and EMS-based

community health services through the development of non-traditional education methods focused on:

- Vocational training;
- Maintenance of clinical skills; and
- Affordability.

◆ Fund at the state and national levels a Rural/Frontier EMS Education and Training Initiative including:

1. Funding to geographic areas which considers progress in completing community EMS assessments and informed self-determination processes;
2. Funding through state EMS offices where needed, to develop effective systems of training and education program/system quality review and approval;
3. Development of flexible models for the implementation of a national model, including certificate and college-based programs, for providing basic, intermediate, and advanced EMS training and continuing education to rural/ frontier areas and its implementation through state EMS offices;
 - Development of this model should include strong consideration of the EMS education dissemination mechanisms, policies and procedures established by successful education programs and consortia;
 - Recognition within the model that EMS education will be provider-need specific, conducted with varied teaching techniques emphasizing hands-on training and, where appropriate, distance learning, to assist the transfer of learning and retention of essential skills and knowledge so as to provide state-of-the-art rural emergency care;
 - Recognition within the model that educational processes should include the evaluation of resources (e.g. EMS system, health care, public safety) and needs (e.g. for cultural competence) at a local level to encourage an integrated community-based approach to EMS education;
 - Recognition within the model that training and education should be driven by health risks of the local population and time-sensitive access to definitive care (e.g. mental health, trauma, stroke).
 - Emphasis within this model on integration of EMS within the health care system, EMS-based community health service opportunities and program development, and the use of local health service resources as clinical and practical skills development settings;
 - Emphasis within the national model on the adult, non-traditional student;

4. Development of a national model to enhance career mobility within EMS practice levels, and between EMS and other health professions, to enhance the ability of rural/frontier areas to retain health workers who wish to gain new skills or advance or change health careers;
5. Emphasizing optimal interdisciplinary care of the ill or injured patient, including complex event management such as cardiac arrest and multiple casualty incidents;
6. Subsidization of training courses and continuing education programs and the instructor, equipment supply, and technical assistance infrastructure necessary to make them accessible to rural/frontier areas;
7. The use of interoperable systems of telemedicine and distance learning to improve the accessibility of training courses, effective quality improvement, and continuing education programs;
8. Incentives to increase the involvement of university medical centers and area health education centers to provide outreach educational programs to rural and frontier areas;
9. Recognition of the need for flexible scheduling to accommodate the lifestyle realities of rural volunteers;
10. Improved rural/frontier accessibility to training programs in emergency medical dispatch, critical incident stress management, and occupational safety training; as well as continuing education programs with curriculum content geared to rural/frontier application as appropriate;
11. Improved rural/frontier accessibility to a training program for service managers which includes EMS leadership, public and elected official advocacy, public education, grant-writing, data collection, research, governing board management, and volunteer management among other topics.
12. Encouraging the development of realistic, dynamic patient simulators and mannequins for case-based and psychomotor skill training and critical-decision making improvement. Support for the development of patient simulator outreach programs;
13. Development of state/regional stockpiling, and sharing of expensive training devices such as mannequins and patient simulators; and
14. Ongoing assessment by rural/frontier EMS agencies and local hospitals of their resources and needs, and searching for common educational opportunities.

Public Information, Education and Relations

- ◆ Develop a national template for community EMS system assessment and informed self-determination processes to help communities determine and be accountable for their own EMS type, level and investment.

- ◆ Fund processes for community EMS system assessment and informed self-determination. Consider regional and statewide resources (e.g. aeromedical services) in implementing these processes.
- ◆ Federal and state EMS agencies, in partnership with public health agencies and national organizations, should continue to develop and distribute data-driven public information resources to local EMS providers which are coordinated with national campaigns but can be tailored for local use and cultural considerations. Develop materials which target the potential community volunteer pool, highlighting the educational and other benefits to volunteers and the benefits to businesses that support volunteers.

Prevention

- ◆ Make prevention one of the EMS-based community health service roles of adequately staffed rural/frontier EMS provider agencies.
- ◆ Among local, state, federal and national EMS and public health agencies (and other agencies with prevention roles), cooperatively develop and fund community health advocacy roles and prevention programs for rural/frontier EMS personnel that are mutually beneficial.
- ◆ Federal agencies and national organizations with prevention roles should channel existing programs through state EMS agencies to local EMS provider agencies.
- ◆ Provider agency policy/procedures and innovative incentives, EMS curricula, and accreditation and other standards target EMS provider health, safety and prevention.

Public Access

- ◆ Assure telephonic or other access to completed Enhanced 9-1-1 (i.e. including accurate physical addressing) and Wireless Enhanced 9-1-1 (i.e. with geolocation of the calling device) through effective federal and state programs, mandates and funding.
 - State EMS offices should consider a patient-centered, medical leadership initiative to encourage E-9-1-1 and WE-9-1-1 system completion where other approaches have failed.
 - Federal funding for state and local public safety communications development should consider progress toward E-9-1-1 and WE-9-1-1 systems completion.
- ◆ Public Safety Answering Points should manage the 9-1-1 call system efficiently and effectively without redundancy (except as created for back-up protection), and assure a coordinated response across traditional, geographical, and jurisdictional boundaries.
- ◆ Integrate Automatic Crash Notification (and other Intelligent Transportation System and Department of Defense technology) and health event advice lines into the process of EMS public access and EMS resource deployment.
- ◆ Provide formal Emergency Medical Dispatch to every caller seeking EMS.

- ◆ States should establish formal plans for roadside call-box, satellite, and/or cellular networks to effectively cover all rural/frontier primary roads.
- ◆ State EMS offices should assure appropriate integration of AEDs and other public access emergency medical device into EMS systems.
- ◆ As home health monitoring devices and automated remote diagnostic technology develop, EMS leaders should pursue roles for EMS in their use to further EMS-based community health services.

Communication Systems

- ◆ Conduct comprehensive state EMS communications needs assessments upon which to base federal, state, and local investment in communications infrastructure improvement.
- ◆ The Universal Service Program fund, Federal Communications Commission, frequency allocation and other national public safety communications organizations and agencies should work to assure that rural/frontier EMS communications are enhanced.
- ◆ Rededicate radio spectrum to EMS and other public safety use.
- ◆ Explore EMS applications of innovative communications and resource management technologies. Encourage federal and state agencies to provide pilot funding and access to their agencies' technology developers and resources for this purpose.
- ◆ EMS leaders should continue to develop ongoing paths of communication with state and federal telecommunications interoperability and Intelligent Transportation Systems industry planning entities.

Clinical Care and Transportation Decisions/Resources

- ◆ The national model for community EMS system assessment and informed self-determination (recommended in the section on Public Information, Education and Relations) should include systems and sources of local medical transportation.
- ◆ Define and require a statewide minimum type and level of EMS to be provided to all communities including equipment and clinical care standards. Fund services which demonstrate a reasonable inability to comply with minimum standards to enable compliance. Community EMS system assessments, and CMS and third-party payers, should utilize these state standards.
- ◆ Plan, integrate and regulate, at the state level, aeromedical, critical care transport, and other statewide or regionwide systems of specialty care and transportation. Consider the evolving role of telehealth resources and their application to EMS patient management and medical oversight.
- ◆ Improve community access to health care and advanced levels of EMS by creating mechanisms for EMS personnel to participate in EMS-based community health services, non-EMS personnel to participate in EMS care, and by exploring and integrating new roles and scopes of practice for all available providers.

- ◆ Create a statewide policy governing the use of controlled substances, devices, and procedures in rural/frontier settings for EMS responders in private vehicles.
- ◆ Facilitate a state-level process, guided by an appropriate multi-disciplinary committee, to ensure inclusive systems of trauma and other time-critical emergency care which define the roles of rural/frontier hospitals. Create a guide to assist these system development processes.
- ◆ Fund pilot EMS-based community health services, transportation and other alternative ALS delivery methods, and projects to support improved EMS infrastructure in rural/frontier areas where data demonstrate a particular unmet need.

Information Systems

- ◆ Fund and implement the National EMS Information System (NEMSIS) to assure smooth, universal data flow from the local through national levels. Facilitate local EMS data collection and information system development.
 - Implement EMS information systems to provide for the aggregation of EMS data among systems at the local, regional, state, and national levels.
 - Implement and maintain a statewide EMS information system in every state. Maintain data on every EMS event in the state in a manner which is timely and of value to local and state EMS agencies.
 - Implement and maintain a local EMS information system at every local EMS service/agency. Maintain data on every EMS event in a manner which is timely and able to drive the quality of the EMS system service and patient care delivery.
 - As needed, share costs and resources required to implement and maintain an EMS information system among multiple systems to achieve an economy of scale.
 - Reflect the development and sophistication of each EMS system in the implementation of its EMS information system. The complexity of equipment and technology used by the EMS information system should be congruent with personnel, education, training, and capability of the EMS system.
 - EMS systems must provide analyzed and descriptive information on the service and patient care delivery which they provide to their EMS personnel, administration, and community.
 - Include the importance, need, and use of EMS service delivery and patient care data in the educational curriculums and continuing educational programs for EMS providers, administrators, and medical directors.
 - Assure a NHTSA or lead federal EMS agency mechanism for the support and every three to five year review of the Uniform EMS

Prehospital Dataset, the Guide to Performance Measures and other components important to the NEMSIS effort.

- Link/integrate EMS data systems with other relevant health information systems at all levels such as public health surveillance, crash, medical examiner, hospital discharge, and emergency department, including CDC surveillance monitoring systems.
- Provide technical assistance for local EMS provider data system development through federal/state agency and professional EMS organization coordination.
- Encourage multi-system data collection for specific research and performance improvement purposes.

Evaluation

- ◆ Federal and state funds should be made available to support the development and implementation of state EMS evaluation activities.
- ◆ Fund the availability of training and toolkits to encourage effective local service/system quality improvement processes.
- ◆ Assure a mechanism for the on-going support and review of the NHTSA “Guide to Performance Measures” and “Leadership Guide to Quality Improvement for Emergency Medical Services Systems” and encourage their use in services and systems.
- ◆ Encourage the development of evidence-based competency criteria.
- ◆ EMS-based community health services pilots and programs should have a physician-supervised evaluation system.

Appendix C - Glossary

Academic	Based upon formal education; scholarly; conventional.
Academic Institution	A body or establishment instituted for an educational purpose and providing college credit or awarding degrees.
Accreditation	The granting of approval by an official review board after specific requirements have been met.
Aeromedical Transport	Emergency transport via rotor or fixed wing aircraft; may be from the scene (primary transport) or interfacility (secondary transport).
Automatic Vehicle Location	Technology or method used to track or determine a vehicle's location or position and report the position, usually by radio, to a communications or command center. Methods include geo-positioning satellite (GPS), electronic sensed sign-posts, loran navigation, and inertial guidance computer mapped systems.
Automatic Crash Notification	Systems, such as “On-Star”, built into vehicles which can send voice and data to ACN dispatch centers, to be relayed to PSAPs, describing crash-related events such as airbag deployment, crash velocity, and occupant condition.

Bridging Program	An abbreviated educational program resulting in credentials that build on prior credentials in a related field; EMT certification for registered nurses.
Bystander	A citizen responder, not part of the EMS response team, on the scene of an illness or injury incident irrespective of training.
Chain of Survival	The four components of EMS response to out-of-facility cardiac arrest that are thought to effect the most optimal patient outcome. The four components include early recognition and EMS access, early CPR, rapid defibrillation, and advanced life support.
Command and Control Center	(Central Communications Center) - A place where responsibility rests for establishing communications channels and identifying the necessary equipment and facilities to permit immediate management and control of an EMS patient. This operation provides access and availability to public safety resources essential for efficient management of the immediate EMS problem.
Communication	The act of communicating. The exchange of thoughts, messages or information, as by speech, signals, writing or behavior. The art and technique of using words effectively and with grace in imparting one's ideas. Something communicated; a message.
Communications	A means of communicating, especially: a system, such as mail, telephone, television or radio, for sending and receiving messages. A network of routes or systems for sending messages. The technology employed in transmitting messages.
Community Health Resource	Capability that may be offered within a neighborhood or community to aid in the detection, surveillance, and support of community health. This may include a municipal organization such as the fire service or EMS, department of public health, social service organization, volunteer organization, and others.
Community Paramedicine	An organized system of services, based on local need, which are provided by EMTs and Paramedics integrated into the local or regional health care system and overseen by emergency and primary care physicians. This not only addresses gaps in primary care services, but enables the presence of EMS personnel for emergency response in low call-volume areas by providing routine use of their clinical skills and additional financial support from these non-EMS activities.
Component	An individual element, aspect, subgroup, or activity within a system. Complex systems (such as EMS) are composed of many components.
Core Content	The central elements of a professional field of study and relations involved; does not specify the course of study.
Cost-effective	Providing the maximal improved health care outcome

	improvement at the least cost.
Cost-effective Analysis	Analysis that determines the costs and effectiveness of an intervention or system. This includes comparing similar alternative activities to determine the relative degree to which they obtain the desired objective or outcome. The preferred alternative is the one that requires the least cost to produce a given level of effectiveness or provides the greatest effectiveness for a given level of cost.
Credentialing or Accrediting Agency	Organization which certifies an institution's or individual's authority or claim to confidence for a course of study or completion of objectives.
Curriculum	A particular course of study, often in a special field. For EMS education it has traditionally included detailed lesson plans. Customary Charge The amount that an individual company charges in the majority of claims for a specific item or service.
Data	Crude, isolated, nonanalyzed measures that reflect the status or degree of a measured attribute of a component or system.
Educational Affiliation	An association with a learning institution(s) (academic), the extent of which can vary greatly from recognition to integration.
Educational Objective	The outcome/goal of the teaching/training conducted; the desired knowledge to be imparted.
Effective	Capable of producing or designed to produce a particular desired effect in "real world" circumstances.
Efficacy	The effect of an intervention or series of interventions on patient outcome in a setting that is most likely to be positive (e.g., the laboratory or other "perfect" settings).
Efficiency	The effect or results achieved in relation to the effort expended (resources, money, time). It is the extent to which the resources used to provide an effective intervention or service are minimized. Thus, if two services are provided that are equally effective, but one requires the expense of fewer resources, that service is said to be more efficient.
Emergency Medical Dispatch	The function of providing prompt and accurate processing of calls, for emergency medical assistance by trained individuals, using a medically approved dispatch protocol system and functioning under medical supervision.
Emergency Medical Dispatcher (EMD)	A trained public safety telecommunicator with additional training and specific emergency medical knowledge essential for the efficient management of emergency medical communications.
Emergency Medical Technician (EMT)	A member of the emergency medical services team who provides out-of-facility emergency care; includes certifications of EMT-Basic, EMT-Intermediate, and EMT-Paramedic progressively advancing levels of care.

Emergency Physician	A physician specialized in the emergency care of acutely ill or injured patients.
EMS-Based Community Health Services	An organized system of services, based on local need, which are provided by EMTs and Paramedics integrated into the local or regional health care system and overseen by emergency and primary care physicians. This not only addresses gaps in primary care services, but enables the presence of EMS personnel for emergency response in low call-volume areas by providing routine use of their clinical skills and additional financial support from these non-EMS activities.
EMS Personnel	Paid or volunteer individuals who are qualified, by satisfying formalized existing requirements, to provide some aspect of care or service within the EMS system.
EMS Physician	A physician with specialized knowledge and skills in the area of emergency medical services, including clinical care and systems management; a physician who specializes in emergency medical services system management, in which the provision of direct patient care is only one component.
EMS Protocol	Written medical instructions or algorithms authorized by an EMS medical director to be used by personnel in the field without the necessity of on-line or real-time consultation with the physician or nurse providing medical direction.
EMS System	An arrangement of medical, public health, and public safety resources to prevent occurrences of emergency illness and injury and to mitigate the impact of such occurrences which can't be prevented. May be local, regional, state, or national.
Enabling EMS Legislation	Law that grants authority to specific entities to undertake activity related to the provision or establishment of an EMS system. Generally, enabling legislation represents a legislature's delegation of authority to a state agency to regulate some or all aspects of an EMS delivery system. This may include technical support, funding, or regulation.
Expanded-EMS/Expanded Scope	Increased dimensions of the services, activities, or care provided by EMS.
Federal Communications Commission	A board of five commissioners appointed by the president under Commission (FCC) the Communications Act of 1934 to formulate rules and regulations and to authorize use of radio communications. The FCC regulates all communications in the United States by radio or wireline, including television, telephone, radio, facsimile, and cable systems, and maintains communications in accordance with applicable treaties and agreements to which the United States is a party.

First Responder	The initial level of care within an EMS system as defined by the EMS Education and Practice Blueprint, as opposed to a bystander.
Health Care Delivery System	A specific arrangement for providing preventive, remedial, and therapeutic services; may be local, regional, or national.
Health Care Facility	A site at which dedicated space is available for the delivery of health care. This may include physicians' offices and urgent care centers, as well as hospitals and other medical facilities.
Health Care Provider Network	Conglomerate of both community and hospital resources participating in a common contractual agreement to provide all health care needs to individual members of society.
Information	A combination of data, usually from multiple sources, used to derive meaningful conclusions about a system (health resources, costs, utilization of health services, outcomes of populations, etc.). Information cannot be developed without crude data. However, data must be transformed into information to allow decision making that improves a given system.
Infrastructure	The basic facilities, equipment, services, and installations needed for functioning; the substructure, components, or underlying foundation of a community or system.
Injury Control	A systematic approach to preventing and mitigating the effects of all injuries.
Injury Prevention	Activities to keep injuries from ever occurring (primary), or reducing further injury once it has occurred through acute care (secondary) and rehabilitation (tertiary).
Legislation	Lawmaking; the procedure of legislating; law or laws made by such a procedure.
Licensing	The act of granting an entity permission to do something which the entity could not legally do absent such permission. Licensing is generally viewed by legislative bodies as a regulatory effort to protect the public from potential harm. In the health care delivery system, an individual who is licensed tends to enjoy a certain amount of autonomy in delivering health care services. Conversely, the licensed individual must satisfy certain initial proficiency criteria and may be required to satisfy ongoing requirements which assure certain minimum levels of expertise. A license is generally considered a privilege and not a right.
Linkage	Connected; combining crude data from various sources to provide information that can be analyzed. This analyzed information allows meaningful inferences to be made about various aspects of a system. (An example would be linking EMS dispatch records, out-of-hospital patient care records, and hospital discharge data.)
Medicaid	A federal program, administered by the states, designed to provide health care coverage to the indigent. Established by Title XIX of

	the Social Security Act.
Medical Oversight	The provision of management, supervision, and guidance for all aspects of EMS to assure its quality of care.
Medical Director	The physician who has the ultimate responsibility and authority to provide management, supervision, and guidance for all aspects of EMS in an effort to assure its quality of care (may be on a local, regional, state, and national level).
Medical Facility	A stationary structure with the purpose of providing health care services (e.g., hospital, emergency department, physician office, and others).
Medical Oversight	The ultimate responsibility and authority for the medical actions of an EMS system.
Medicare	A federal program designed to provide health care coverage to individuals 65 and over. Established on July 30, 1965, by Title XVIII of the Social Security Act.
Network	A formal system linking multiple sites or units.
On-line Medical Direction	The moment-to-moment contemporaneous medical supervision/guidance of EMS personnel in the field, provided by a physician or other specialty qualified health professional (e.g., mobile intensive care nurse), via radio transmission, telephone, or on the scene. Out-of-facility EMS Remote from a medical facility. In the case of EMS it pertains to those components of the emergency health care delivery system that occur outside of the traditional medical settings (e.g., prehospital care, transportation, and others).
Outcome	The short, intermediate, or long-term consequence or visible result of treatment, particularly as it pertains to a patient's return to societal function.
Pilot Project	A systematic planned undertaking which serves as an experimental model for others to follow.
Preparedness Based Payment	Reimbursing EMS agencies for the cost of being prepared to respond to an emergency.
Prevailing Charge	The amount that falls within the range of charges most frequently billed in the locality for a particular service.
Protocol	The plan for a course of medical treatment; the current standard of medical practice.
Provider	An individual within an EMS system with a specific credential(s) that defines a specific level of competency (i.e., first responder, EMT- Basic, EMT-Intermediate, EMT-Paramedic, or other).
Public Education	Activities aimed at educating the general public concerning EMS and health related issues.
Public Health	The science of providing protection and promotion of community

	health through organized community effort.
Public Safety Answering Point (PSAP)	A facility equipped and staffed to receive and control 9-1-1 emergency telephone calls.
Public Safety Telecommunicator	An individual trained to communicate remotely with persons seeking emergency assistance, and with agencies and individuals providing such assistance.
Real-time Patient Data	Current patient information provided by a field technician at the patient location to a physician or health care facility at a remote site, potentially for the purpose of assisting the physician to make a better informed decision on patient treatment and/or transport.
Reciprocity	The ability for a license or certificate to be mutually interchangeable between jurisdictions.
Regional EMS System	A systematic approach to the delivery of Emergency Medical Services defined by distinct geographic boundaries that may or may not cross state boundaries.
Regulation	Either a rule or a statute which prescribes the management, governance, or operating parameters for a given group; tends to be a function of administrative agencies to which a legislative body has delegated authority to promulgate rules/regulations to “regulate a given industry or profession. Most regulations are intended to protect the public health, safety and welfare.
Reimbursement	To compensate; to repay.
Research	The study of questions and hypotheses using the scientific method.
Rural/Frontier	The wilderness of woods, hills, mountains, plains, islands and desert outside of urban/suburban centers.
Scope of Practice	Defined parameters of various duties or services which may be provided by an individual with specific credentials. Whether regulated by a rule, statute, or court decision, it tends to represent the limits of what services an individual may perform.
State-of-the-art	The highest use of technology or technique known at the time.
Statute	An act of a legislative body which has been adopted pursuant to constitutional authority, by certain means and in such form that it becomes a law governing conduct or actions.
Subscription Program	A prepayment program; a prepayment made to secure future events; a prepayment made to secure a reduced ambulance bill either through assignment or discount. Must be actuarially sound.
Telephone Aid	Ad-libbed telephone instructions provided by either trained or untrained dispatchers, differing from “dispatch life support pre-

	arrival instructions in that the instructions provided to the caller are based on the dispatcher 's knowledge or previous training in a procedure or treatment without following a scripted pre-arrival instruction protocol. They are not medically pre-approved since they do not exist in written form.
Telephone Treatment Protocol	Specific treatment strategy designed in a conversational script format that direct the EMD step-by-step in giving critical pre-arrival instructions such as CPR, Heimlich maneuver, mouth-to-mouth breathing, and childbirth instruction.
Third Party Payer	Insurance; an entity which is responsible to pay for services even though it is not directly involved in the transaction.

Appendix D - List of Acronyms and Abbreviations

AAFP	American Academy of Family Practice
AAMS	Association for Air Medical Services
ACEP	American College of Emergency Physicians
ACLS	Advanced Cardiac Life Support
ACN	Automatic Crash Notification
AED	Automated External Defibrillator
ALS	Advanced Life Support
AVL	Automatic Vehicle Locator
CAH	Critical Access Hospital
CCU	Critical Care Unit
CDC	Centers for Disease Control and Prevention
CHR	Community Health Representative
CMS	Centers for Medicare and Medicaid Services
CPR	Cardio Pulmonary Resuscitation
DHS	Department of Homeland Security
DOC	Department of Commerce
DOD	Department of Defense
DOJ	Department of Justice
E-EMS	Expanded EMS
E-9-1-1	Enhanced 9-1-1
EMD	Emergency Medical Dispatch
EMS	Emergency Medical Services
EMS ²	"EM-Squared" (fictitious event management database program)
EMSCHS	EMS-Based Community Health Services
EMSC	Emergency Medical Services for Children
EMT	Emergency Medical Technician (generic - refers to all levels of EMT)
EMTALA	Emergency Medical Treatment and Active Labor Act
EMT-B	Emergency Medical Technician - Basic
EMT-I	Emergency Medical Technician - Intermediate
EMT-P	Emergency Medical Technician - Paramedic (sometimes just referred to as Paramedic)
EPAD	Emergency Provider Access Directory
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FICEMS	Federal Interagency Committee on EMS
GPS	Global Positioning System
HIPAA	Health Insurance Portability and Accountability Act
HRSA	Health Resources and Services Administration
IHS	Indian Health Services
ITS	Intelligent Transportation Systems
MCO	Managed Care Organization
MDU	Mobile Data Unit
NAEMSP	National Association of EMS Physicians
NASEMSD	National Association of State EMS Directors
NAS-NRC	National Academy of Science - National Research Council
NCCMCR	National Centers to Coordinate Multi-Center Research
NEDARC	National EMS for Children Data Analysis Resource Center

NEMSIS	National EMS Information System
NEMSRC	National EMS Research Centers
NHTSA	National Highway Traffic Safety Administration
NOSORH	National Organization of State Offices of Rural Health
NRHA	National Rural Health Association
ODP	Office of Domestic Preparedness
OR	Operating Room
ORHP	Office of Rural Health Policy
OSEMSI	Open Source EMS Initiative
PDA	Personal Digital Assistant
PI	Performance Improvement
PIER	Public Information, Education and Relations
PSAP	Public Service Answering Points
QI	Quality Improvement
QIO	Quality Improvement Organizations
REMSTTAC	Rural EMS and Trauma Technical Assistance Center
SAFE	Safety Advice from EMS
UHF	Ultra High Frequency
USDHEW	U.S. Department of Health Education and Welfare
USDHHS	U.S. Department of Health and Human Services
USDOT	U.S. Department of Transportation
VHF	Very High Frequency
WE-9-1-1	Wireless Enhanced 9-1-1

Appendix E - References and Literature Review

This section will list references to be cited in final draft and a website link to the literature review completed in association with the development of this document.

Appendix F - List of Successful Practices Received During Project

This section will list, under the title headings of the main sections (e.g. “Educations Systems”), practices that have been submitted by contributors as useful in overcoming barriers to EMS or in developing solutions which are similar to the recommendations of this document.

Appendix G - Steering Committee, Editorial Board and Staff

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Al Lewis, Texas Office of Rural Health
Mary Sheridan, Nevada Office of Rural Health
Dr. Greg Mears, North Carolina Office of EMS
Jim Prince, Alabama Office of EMS
Chris Tilden, Kansas Office of Rural Health
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Eli Briggs, National Rural Health Association

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Nels Sanddal, Critical Illness and Trauma Foundation, Montana
Gary Wingrove, North Central EMS Institute, Minnesota
Dr. James Upchurch, Indian Health Service, Montana

Staff and Writing/Editorial/Meeting Facilitation Volunteers

Kevin McGinnis, MPS, EMT-P - Principal Investigator/Author, NASEMSD, Maine
Dr. Richard Narad – Literature Review Author/Editor, Department of Health and Community Services, California State University, Chico
Nels Sanddal, Writer/Meeting Facilitator, Critical Illness and Trauma Foundation, Montana
Steve Hirsch, Editor (Appendix J), Office of Rural Health Policy, HRSA, USDHHS, Washington, DC
Gary Wingrove, Writer (Primary – Appendix J)/Meeting Facilitator, North Central EMS Institute, Minnesota
Thomas Judge, Writer (Appendix J), LifeFlight of Maine
Jim Derrick, Writer/Editor (Scenarios)/Meeting Facilitator, New Mexico Office of EMS
Marvin Firch, Writer (Glossary), Meeting Facilitator, Iowa Office of Rural Health
David Lake, Meeting Facilitator, Kansas Office of EMS
Fergus Laughridge, Writer (Scenarios)/ Meeting Facilitator, Nevada Office of EMS

Daniel Patterson, Writer (Citations), University of South Carolina Rural Health Research Center

Dr. Greg Mears, Meeting Facilitator, North Carolina Office of EMS

Jim Prince, Meeting Facilitator, Alabama Office of EMS

Chris Tilden, Meeting Facilitator, Kansas Office of Rural Health

Dennis Berens, Meeting Facilitator, Nebraska Office of Rural Health

John Barnas, Meeting Communications Coordinator, Michigan Office of Rural Health

Dean Cole, Meeting Facilitator, Nebraska Office of EMS

Nancy McGinnis, Editor, Off The Wall Communications, Maine

Sarah McGinnis, Graphic Design Consulting/Data Entry, Maine

Shelly Ten Napel, Meeting Coordination/Public Relations, NRHA, Virginia

Jeff Sullens, Web Creation and Management, NRHA, Kansas

Appendix H - NRHA May 26, 2004 Agenda Review Conference

Robert Beattie	WRRMC; North Dakota
Eli Briggs	National Rural Health Association;
Lee Brown	KEMSA
Sean Caffrey	
Darrell Carter	CALS
Raymond Christensen	University of Minnesota; Minnesota
Dean Cole	Nebraska EMS; Nebraska
Colin Collins	AIR EVAC EMS; Missouri
Leslie Collins	AIR EVAC EMS; Missouri
Ken Cook	Virginia Rural Health Association; Virginia
Christy Crosser	Mountain States Group; Colorado
Bethany Cummings, DO	National Association of EMS Physicians; Virginia
Jim Derrick	New Mexico EMS; New Mexico
Lynette Dickson	UND Center for Rural Health; North Dakota
David A. Duke	Tampa General Aeromed; Florida
Monica Eberhardt	Colorado Rural Health Center; Colorado
Marvin Firsch	Iowa State office of Rural Health; Iowa
Jim Flaherty; MD	Indian Health Service; Arizona
Caroline Ford	NV Office of Rural Health; Nevada
Mike French	AHEC; Missouri
Ray W. Geib	Illinois School of Medicine; Illinois
Walt Gregg, PhD	University of Minnesota; Minnesota
Brian Haapala	Stroudwater; Maine

Sandy Hayes	AR ORH; Arkansas
Joyce Hospodar	Rural Health Office; Arizona
James Hotz	AAPNC; Georgia
Dane W. Hult	
Kery Hummel	Maryland
Kevin Hutton	Golden Hour Data Systems; California
Susan Jones	SCCRC; Texas
Ali Akbar Khan	West Virginia
Pennie Klein	Washington Department of Health; Washington
Astrid Knott	
Kurt Krumperman	Rural/Metro; Arizona
David Lake	Kansas BEMS; Kansas
Erica Lapierre	Rural Health Resources; New York
Dennis LaRavia	BFM; Texas
Fergus Laughridge	NASEMSD; Nevada
Shannon Lizer	University of Illinois at Chicago; Illinois
Jim K. Long	WRHS; North Dakota
John McCarty	Region II EMS; New Mexico
Kevin McGinnis	NASEMSD; Maine
Jim Mayberry	Department of Health Wyoming EMS; Wyoming
Evan Mayfield	Office of Rural Health Policy, HRSA, USDHHD; Washington, DC
Richard Mayforth	WRHS; South Dakota
Greg Mears, MD	University of North Carolina; North Carolina
Kyle Muus	North Dakota State office of Rural Health; North Dakota
Lauren Ostrow	Merginet; California
Maureen Phillips	California
Bob Prewitt	Finney County EMS; Kansas
Jim Prince	NASEMSD; Alabama
Michael H. Reynolds	Carlsbad Fire Department; New Mexico
Thomas Robertson	
Josie Rodriguez	HHSO OMH; Nebraska
Terri L. Sanddal	Rural EMS and Trauma Technical Assistance Center; Montana
Donald Schoolcraft	West Central Indiana AHEC; Indiana
Frank Shelton	IRHA; Indiana
Mary Sheridan	Idaho State Office of Rural Health; Idaho
Kip Smith	MHREF; Montana

Erik Southard	Midwest Center for Rural Health; Indiana
Jim Stover	New Mexico
Shelly Ten Napel	National Rural Health Association; Virginia
Chris Tilden	KS Office of Local & Rural Health; Kansas
Vicky Wheaton	Adirondack Rural Health Network
Kathy Williams	Iowa State office of Rural Health; Iowa
Louann Wilroy	Colorado Rural Health Center; Colorado
Susan Wilson	NW Health Services

Appendix I - Contributors/Reviewers and Organizational Liaisons

Mike Adams	Life Line Ambulance; Arizona
Ken Allen	EMS for Children National Resource Center
Cheryl Anderson	Health Resources and Services Administration; Maryland
Anita Bailey	Iowa Department of Public Health; Iowa
Clyde Barganier	Alabama Department of Public Health; Alabama
Shawn Baumgartner	Valley Ambulance
Richard Beebe	Bassett Healthcare; New York
Richard Benjamin	Office of EMS and Trauma Systems; Washington
Thomas Benzoni; DO	American Board of Osteopathic Emergency Medicine; Iowa
Dennis Berens	National Organization of State Offices of Rural Health; Nebraska
Lanny Bernard	Lancaster County EMS; South Carolina
Gary Briesse	International Association of Fire Chiefs
Eli Briggs	National Rural Health Association; Virginia
Bill Bryant	Sierra Health Group, Texas
Cindy Button; EMT-P	Aero Methow Rescue Service; Washington
Bruce Cheeseman	
Dennis A. Clark; DVM	Bruceville Eddy EMS; Texas
E. James Cole; MA, EMT-P, WEMT-I, EMSI	Cleveland Clinic Health System School of EMS; Ohio
Colin Collins	Air Evac Lifeteam; Missouri
Leslie Collins	Air Evac Lifeteam; Missouri

Bethany Cummings, DO	National Association of EMS Physicians, Winchester Fire and Rescue; Virginia
Michael W. Day; RN, MSN, CCRN	Northwest MedStar; Washington
Drew Dawson	National High Way Traffic Safety Administration, USDOT; Washington, DC
Jim Derrick	New Mexico EMS; New Mexico
Michael DiMucci; RN, MSN, APRN, FNP-C, NREMT-P	Mercy Hospital & Healthcare Center EMS Department; Minnesota
Raina Dodson-Eimer	Presidio EMS, Inc.; Texas
James Effinger; EMT-P	Cresson Area Ambulance Service, Inc.; Pennsylvania
Barb Elliott	Altmar Fire/Rescue, NOCA Ambulance; New York
Tim Erskine	Ohio Department of Public Safety/EMS; Ohio
Bruce Evans	
William E. Field	Purdue University; Indiana
Marvin Firch	Iowa Department of Public Health; Iowa
James Flaherty; MD	Navajo EMS/Indian Health Services; Arizona
Michael Fraley	Saint Joseph's Hospital; Wisconsin
Jennifer Frenette	North Country Health Consortium; New Hampshire
Dia Gainor	Idaho EMS, Idaho
Alan Garner	Big Lake Volunteer Fire Department; Texas
Roberta S. Gearhardt; RN, EMT-P	JXT Applications, Inc.; Ohio
Jeffrey L. Gebauer; NREMT/B	Akron/Westfield EMS; Ohio
Tony Gerard; MD	American College of Emergency Physicians, Rural EMS Task Force; Pennsylvania
Michael Glenn	Ohio Department of Public Safety; Ohio
James D. Goerke	National Emergency Number Association (NENA); Texas
Larry D. Goldsmith; NREMT-I	South Dakota EMT Association; South Dakota
Walt Gregg, PhD	University of Minnesota; Minnesota
James D. Hailey	EMS; Texas
Stephen E. Hale	Clarion Hospital EMS; Pennsylvania
Kathy Haley	Society of Trauma Nurses; Ohio
Ted Halpin	Farmedic Program, Cornell University; New York
Chris Hanna	Children's Safety Network; Wisconsin
Betty Hastings	Indian Health Services, USPHS; Maryland

Meredith Hellestrae	Commission on the Accreditation of Ambulance Services; Illinois
Dina Herrington; BS, EMT-P	Drexel University; Pennsylvania
Bryan Hess	Gunnison Valley Hospital-EMS; Colorado
Lucinda F. Hill; RN, BSN, EMT-P	Southeastern Ohio Regional Medical Center; Ohio
Steve Hirsch	Office of Rural Health Policy, HRSA, USDHHD; Washington, DC
Jeff Hovatter; EMT-P	Hocking County EMS; Ohio
Lisa Hyde	NEDARC
John Jermyn, MD	American College of Emergency Physicians
Mark S. Johnson	Arkansas Department of Health & Social Services, Arkansas
Tom Judge; EMT-P	Association of Air Medical Services; Maine
Melissa Juhl	Oyens; Iowa
David T. Kim; MD	Idaho Emergency Physicians; Idaho
Douglas F. Kupas, MD	National Association of EMS Physicians
David Lake	Kansas EMS; Kansas
Les Landry; MS, PA-C	Remote Services, Inc.; Alaska
Cheri Lane	Sweet, an Ortivus Company; Iowa
Warren J. Larson	Life Run Ambulance; Idaho
Fergus Laughridge	National Association of State EMS Directors; Nevada
Gerri LeBeau	Mountain Plains Health Consortium; South Dakota
Al Lewis	Office of Community Rural Affairs; Texas
Shannon Lizer; DNSc, APN-FNP, EMT-P	University of Illinois at Chicago; Illinois
Kurt Lucas	Littleton Regional Hospital; New Hampshire
Ann Lystrup	Air & Surface Transport Nurses Association; Utah
Dawn M. Mancuso, CAE	Association of Air medical Services; Virginia
Juan A. March	East Carolina University; North Carolina
Jim Mayberry	Association of State and Territorial Health Officials; Wyoming EMS; Wyoming
Evan Mayfield	Office of Rural Health Policy, HRSA, USDHHD; Washington, DC
Debbie McBane	Michigan
Susan McHenry	National Highway Traffic Safety Administration, SDOT, Washington, DC
Greg Mears, MD	University of North Carolina; North Carolina

Merrill Meese	Iowa Department of Public Health, Belmond Medical Center; Iowa
Michael C. Merrill	CDPHE/Prehospital Care Program; Colorado
Carol Miller	Frontier Education Center, New Mexico
Ralph Mitchell, Jr.	Alabama
Karl Moeller	American Heart Association; Washington, DC
Lori Moore	International Association of Firefighters; Washington, DC
Mark Morrison	Limon Ambulance Service; Colorado
Joy Erb Moser; RN	Saint Joseph's Hospital; Wisconsin
Zoann Murphy	Alaska EMS Office; Alaska
Tony Myers	Texas Ambulance Association; Texas
Richard Narad	California State University at Chico; California
Susan Neel; EMT-P	Central EMS; Texas
Spencer Newton	Schweitzer Fire District; Idaho
Cindy Norris	Association of Community Health Representatives; Arizona
Robert O'Connor, MD, MPH	American Heart Association
Robert E. Omstead; EMT-P/FF	Oregon
Jolene Parini-Shipley	New Plymouth Quick Response Unit; Idaho
Mary Lou Parker	Truro Fire & Rescue; Iowa
Daniel Patterson; MPH, PhD	South Carolina Rural Health Research Center; South Carolina
Vicki Pendleton; RN, BSN, HP	Saint Francis University, CERMUSA; Pennsylvania
Christian Perry	Ambulance Service Management Corporation; Pennsylvania
Dov Pincus; EMT-P	Hatzalah Volunteer Ambulance Corps; New York
Marilyn Polito	Mary Greeley Medical Center; Iowa
Jacob "Mac" Qualls	Meadows Valley Ambulance Service; Idaho
Leslie Upledger Ray	American Public Health Association; California
Kathy Robinson, RN	Emergency Nurses Association; Pennsylvania
Sandy Ryman	Northeast Oregon AHEC; Oregon
Nels D. Sanddal	Rural EMS and Trauma Technical Assistance Center; Montana
Gary O. Sauers	JC Blair Memorial Hospital & Huntingdon County EMS Partnership; Pennsylvania
Jeff Schanhals	Northeast Colorado Regional EMS/Trauma Advisory Council; Colorado

Jeffrey K. Scott	Lodi Community Hospital; Ohio
Jack M. Smith	North Slope Borough Fire Department; Alaska
Kris Sparks	Office of Community and Rural Health; Washington
Cindy Stafford, EMT-I	San Saba County EMS; Texas
Cathy Stueckemann, JD, MPA	CHR and EMS Programs, Indian Health Service; Maryland
Daniel Swayze	EMED Health; Pennsylvania
Dave Taylor	National Association of Community Health Centers
Ken Threet	National Council of State Training Coordinators; Montana
Chebon Tiger	National Native American Emergency Medical Services Association; Texas
Chris Tilden	Kansas Rural Health Office; Kansas
Gretchen Tolsma	Agnesian Healthcare; Wisconsin
Leta Travis; EMT	Garfield County Health District; Idaho/Washington
Jim Upchurch; EMTP, MD	Indian Health Service; Montana
Cindy Wasserburger	C.A.C.A. VFD/Rescue; New Mexico
A. Robert Welte; EMTP-FF	Woodbury Co. Emergency Services; Iowa
Keith Wesley; MD	Eau Claire County EMS; Wisconsin
Timothy Whitaker	Sandusky County EMS; Ohio
Gary Wingrove	American Ambulance Association; Minnesota
Tami Wires; EMTP	Vinton County EMS; Ohio
John Wish	Association of Air Medical Services; Oregon
Edward Wronski	New York State EMS; New York
Russell Wyatt	Culberson Hospital EMS; Texas
Wymond; EMT-B	Virginia

Appendix J - Defining “Rural” for Reimbursement

Defining “Rural” and “Access” Appropriately for Emergency Medical Services

“Access to health care for rural Americans has to be examined according to the service needed. It is one thing for a resident to travel 30 to 60 miles for routine examinations or elective surgery. It is a whole different ball game when the emergency medical service needs to be delivered timely to the resident experiencing a heart attack.” John Baerg, Emergency Medical Technician and Commissioner, Watonwan County, Minnesota

For the purposes of program administration the Federal government has created many different methods for defining rural America. To date, there is no universally accepted definition of “rural” across Federal agencies and various definitions are used simultaneously in developing policies for grant formulas or adjusting payment for services purchased by the Federal government. While it may be appropriate to use multiple definitions of rural, the definition used for a particular program or purpose should adequately describe the geography that the program or purpose is intended to serve.

Access to healthcare is an increasing challenge in rural communities. A year 2000 Blue Ribbon Commission in Maine noted that “given the distribution of Maine’s population, geography is also a significant factor in access. Those in the more populous parts of the state have more opportunities for care.”¹ A consumer accessing specific health care services like primary care physician or hospital care has different needs than farmers accessing funding formulas for crop support. Geographical need must be integrated with time in the access of emergent healthcare. Only recently has the Centers for Medicare and Medicaid Services (CMS) or the US General Accounting Office (GAO) explored alternatives for defining “rural” in relation to access to emergency medical services (EMS).

EMS is different from other health care services because it is a service delivered directly to the consumer often times during life-threatening events when minutes and even seconds count. Unlike other health care encounters swift response determines EMS outcomes. In accessing emergency care, time and miles are as much key determinates in mortality and morbidity as the specific injury or illness. In emergency care, access is a combination of resource availability and time based care.

In recent years, significant progress has been made at the Federal level in developing adequate funding and resource availability through cost based reimbursement for physician and hospital services in the Federally Qualified Health Centers, Rural Health Clinics, and Medicare Rural Hospital Flexibility (Critical Access Hospital) Funding

¹ Maine Emergency Medical Services Board. (2000) *Blue Ribbon Commission Report to the Governor*.

Programs. There are no equivalent programs for EMS². In addition, existing definitions and funding mechanisms do not adequately describe rural for the purpose of assuring timely access to emergency healthcare.

Federal programs that are geared toward ensuring a stable and vibrant EMS system need a better method of defining rural and access that is geared toward this unique combination of access issues. An appropriate EMS definition of “rural” must account for a combination of service availability, population coverage, and a time based geographic delivery of emergency services. To insure the existence of a stable and vibrant EMS system, Federal programs should define and serve rural communities with policies that encourage service availability with optimal response times to emergent events.

Existing Federal Methods for Defining Urban and Rural

Metropolitan Statistical Areas & New England City and Town Areas

The most widely used definition of urban and rural was developed by the Office of Management and Budget (OMB) when it created “Metropolitan Statistical Areas” or MSAs in the 1940s³. This method designates rural counties by exclusion. Until 2000, each county (or in the case of New England, towns within counties) was metropolitan⁴ because it is an MSA⁵ or the county was non-metropolitan.

New England was treated differently than all other parts of the country with both an MSA county level designation and a further definition of New England County Metropolitan Areas (NECMA). NECMAs were not designated using entire counties, but individual towns and cities were designated metropolitan areas. All other areas, even those inside counties with metropolitan towns or cities were considered non-metropolitan.

In 2000 OMB changed this classification by adding a third component, Micropolitan^{6,7} counties, and changed the NECMAs to New England City and Town Areas (NECTAs).⁸ The combination of Metropolitan and Micropolitan counties is now called Core-Based Statistical Areas (CBSA). All counties that are part of an MSA are considered urban. All other counties, including Micropolitan counties, are still considered non-metropolitan by the Department of Health & Human Service’s (DHHS) federal Office of Rural Health

² The Medicare Rural Hospital Flexibility Program has a provision to provide cost-based ambulance services, but it is limited by federal legislation to ambulance services owned and operated by Critical Access Hospitals (CAHs) and then further limited to CAH ambulance services at least 35 miles from the next ambulance service. Very few ambulance services qualify for this reimbursement because rural ambulance services tend to be community operated and are spaced closer than 35 miles in order to maintain acceptable response and transport times.

³ Washington State Department of Health. (2004) *Guidelines for Using Rural-Urban Classification Systems for Public Health Assessment*. <http://www.doh.wa.gov/Data/Guidelines/RuralUrban.htm>. p.8.

⁴ <http://www.census.gov/population/estimates/metro-city/03mfips.txt>

⁵ <http://www.census.gov/population/estimates/metro-city/03msa.txt>

⁶ <http://www.census.gov/population/estimates/metro-city/03mcsa.txt>

⁷ <http://www.census.gov/population/estimates/metro-city/03nmfips.txt>

⁸ <http://www.census.gov/population/estimates/metro-city/03nfips.txt>

Policy (ORHP) and the Department of Agriculture's (USDA) Economic Research Service (ERS). Counties that are not CBSAs are considered rural by OMB.

In this methodology, a county or counties is Metropolitan because they have either cities or urbanized areas with population exceeding 50,000 (MSA); or, at least 50% of the population resides in urban areas of 10,000 or more population; or, that contain at least 5,000 people residing within a single urban area of 10,000 or more population ("central county"). "Outlying counties" are included in the CBSA if they meet specified requirements of commuting to or from the central counties.

OMB creates a list of CBSAs (MSA and NECTA plus their Micropolitan components) for the single expressed purpose of collecting and reporting statistics. In fact, OMB expressly cautions federal agencies and Congress against the use of these county-based definitions for any purpose other than gathering and reporting statistics. OMB specifically states, "The Metropolitan and Micropolitan Statistical Area Standards do not equate to an urban-rural classification; many counties included in Metropolitan and Micropolitan Statistical Areas, and many other counties, contain both urban and rural territory and populations"⁹ [emphasis added]. OMB stresses that there are "often unintended consequences" when using the definitions for non-statistical purposes.

CBSAs are based on county boundaries. County boundaries are established by states and are stable over time. Many county lines were arbitrarily drawn around physical features (e.g., lakes and rivers), property tracts, existing settlements, or existing political needs around populations. Over time, populations have re-organized to meet different needs. For example, at one time rivers were once essential for moving raw materials and products to different parts of the country and therefore mills and factories were established adjacent to water ways. As transportation evolved to rail, truck, or air and electrical generation became less dependent on rivers and streams, major waterways became less significant for industry and in production and population growth shifted towards rail lines, interstates and airports. County boundaries, though, remain stagnant. In the densely populated Eastern states, counties are relatively small in geographical size. Counties tend to be significantly larger in the Midwest and West.

Federal agencies have investigated a number of ways to modify CBSAs while still using county lines as the basis for urban-rural distinctions. ERS has created Rural-Urban Continuum Codes¹⁰, Urban Influence Codes¹¹ and Public Use Micro Data Sample-Labor Market Areas¹².

⁹ Office of Management & Budget. 2003. <http://www.whitehouse.gov/omb/bulletins/b03-04.html>. OMB BULLETIN NO. 03-04. June 6, 2003.

¹⁰ <http://www.ers.usda.gov/Briefing/RuralUrbCon/>

¹¹ <http://www.ers.usda.gov/briefing/rural/UrbanInf/>

¹² <http://www.ers.usda.gov/DB/PUMSL/>

The failure of county based methods in describing rural and urban geography as a means to distinguish market areas has been well documented. In 1998 Ricketts¹³, et al, stated “Metropolitan counties may include substantial rural areas...” and later stated “the criteria for identifying isolated rural areas have been applied to only very large counties though it is obvious there are equally isolated areas in many of the smaller counties of the nation.”

In 1989 the Office of Technology Assessment¹⁴ said, “Problems in MSA classification may occur when county boundaries do not conform to actual urban or suburban development. An MSA may inappropriately include nonsuburban areas located in the outlying sections of some counties.” In 2000 Zelarney¹⁵, et al, said “metro boundaries based on counties can extend well past the dense urban core into much less densely settled – even frontier – territory.”

In recognition of these issues, in 1993 the ORHP and ERS commissioned an investigation by Harold F. Goldsmith¹⁶, et al, to develop refinements in defining MSAs to better describe rural and urban geography. The paper noted that “when Federal programs are implemented to provide health services to rural areas, they immediately encounter the problem that there are no operational definitions of “rural areas” which precisely divide the population of the United States into “rural residents” and “urban residents.” The two most commonly used dichotomous definitions are rural areas and urban areas, a Bureau of the Census (BC) designation based on density, and metropolitan areas and non-metropolitan areas, and Office of Management and Budget (OMB) designation based on the integration of counties with big cities (see Hewitt 1989 and OMB 1990). Both definitions are useful but imperfect.”

This modification sought to identify large urban counties (1,225 square miles or more) that contained census tracts with urban pockets but low population density as “rural areas, with their small populations, sparse settlement and remoteness, often needed Federal government assistance in order to maintain a variety of essential health services. Under usual market conditions, health and related services tend to be concentrated in big cities and their suburban areas (see United States General Accounting Office, Nov. 1992, and Goldsmith, et al, in press). Thus, residents of small towns or the open country (rural residents) are considerably less likely than the residents of big cities and their suburbs to have easy geographical access to health services unless the development of such services is encouraged and supported.”

¹³ Ricketts, Thomas C.; Johnson-Webb, Karen D.; and Taylor, Patricia. *Definitions of Rural: A Handbook for Health Policy Makers and Researchers*. Chapel Hill, NC: Cecil G. Sheps Center for Health Services Research, University of North Carolina, July, 1998. Pages 6-7.

¹⁴ Hewitt, Maria. *Defining “Rural” Areas: Impact on Health Care Policy and Research*. Washington, DC: Office of Technology Assessment, Congress of the United States, July 1989. Page 8.

¹⁵ Zelarney, Pearlanne T, and Ciarlo, James A. *Defining and Describing Frontier Areas in the United States: An Update – Letter to the Field No. 22*. Boulder, Colorado: Western Interstate Commission for Higher Education, December, 2000.

¹⁶ Goldsmith, Harold F.; Puskin, Dena F; and Stiles, Diane J. *Improving the Operational Definition of “Rural Areas” for Federal Programs*. Washington, DC: Federal Office of Rural Health Policy, 1993. <http://ruralhealth.hrsa.gov/pub/Goldsmith.htm>

Based on 1980 Census results, the researchers used the proposed modification formula to identify 75 counties nationwide for which only part of the county would be recognized as urban. In 1996 twelve additional counties were added to the list based on 1990 Census data. *ORHP has no plans to update the Goldsmith modification in the future.* ORHP has abandoned this method in favor of the Rural Urban Commuting Areas (RUCA) approach.

In the 1990s the ORHP and the USDA began collaborating and commissioned a study by the University of Washington¹⁷ on a new way to define rural that would decrease the inherent defects of MSA distinctions between “urban” and “rural” communities. Rural-Urban Commuting Areas (RUCA) account for commuting patterns and build on definitions of urbanized areas and urban places developed by the Census Bureau. RUCAs are used to define eligibility for many programs administered through ORHP and can be mapped by census tract or zip code. They have proven a valuable resource for defining rural in terms of citizens having access to services they may travel to. RUCAs are established by assigning codes to Census Tracts that are then mapped to zip codes.¹⁸ ORHP is planning to update RUCAs and publish a federal register notice in fall 2004.

According to the ERS¹⁹, RUCAs are “based on measures of urbanization, population density, and daily commuting.” According to the Office of Technology Assessment²⁰, “to study the geographic variation of access to health care, a typology that includes population size, density, and distance to large settlements is of interest.” RUCAs meet all of these tests. The Washington State Department of Health²¹ describes RUCAs as “a ten-tiered classification system based on census tract geography. Both population size and commuting relationships are used to classify census tracts ... The RUCA system provides a great deal of flexibility as the codes can be collapsed or combined in several different ways.”

EMS Urban-Rural Distinctions

Prior to 2002, ambulance reimbursement for Medicare Beneficiaries was based on traditional charge to cost profiles (for hospital-based providers) or a Health Care Finance Administration (HCFA) defined “reasonable charge” method (for non-hospital ambulance suppliers) developed for individual and groups of providers within sub-regional area. There was no urban rural distinction and charges and reimbursement varied widely throughout the country and even within regions.

¹⁷ <http://www.fammed.washington.edu/wwamirhrc/rucas/rucas.html>

¹⁸ The methods used by the University of Washington to map Census Tract RUCA assignments to zip codes are available at <http://www.fammed.washington.edu/wwamirhrc/rucas/methods.html>. Population distribution across the RUCA codes resulted in less than 1% variation between CTs and zip codes.

¹⁹ <http://www.ers.usda.gov/Briefing/Rurality/RuralUrbanCommutingAreas/>

²⁰ Hewitt, page 24.

²¹ <http://www.doh.wa.gov/data/guidelines/ruralurban.htm>

As a requirement of the 1997 Balanced Budget Act, CMS issued a Final Rule in February 2002²² creating a single national fee schedule for emergency and non-emergency ambulance services. Considerable effort was expended in the five year negotiated rule making process on defining an urban-rural distinction. The Final Rule defined “a rural area to be an area outside a Metropolitan Statistical Area (MSA) or a New England County Metropolitan Area, or an area within an MSA identified as rural, using the Goldsmith modification.”

The Rule noted that “we could not easily adopt and implement, within the constraints necessary to implement the fee schedule timely, a methodology for recognizing geographic population density disparities other than MSA/non-MSA. However, we will consider alternative methodologies that may more appropriately address payment to isolated, low-volume rural ambulance suppliers. Thus, the rural adjustment in this rule is a temporary proxy to recognize the higher costs of certain low-volume rural suppliers.”²³

The Rule also said, “Several difficult issues will need to be resolved to establish more precise criteria for suppliers that should receive the rural adjustment. Examples of such issues include: (1) Appropriately identifying an ambulance supplier as rural; (2) identifying the supplier’s total ambulance volume (because Medicare has a record only of its Medicare services); and (3) identifying whether the supplier is isolated, because some suppliers might not furnish services to Medicare beneficiaries (thus, Medicare would have no record of their existence) and one of these suppliers might be located near an otherwise “isolated” supplier. Addressing these issues in some cases will require the collection of data that are currently unavailable. We intend to work with the industry and with the Office of Rural Health Policy to identify and collect pertinent data as soon as possible.”²⁴

MSAs with the Goldsmith modification are the current method used by CMS to describe rural for the purposes of reimbursement under the Medicare Ambulance Fee Schedule. CMS has taken these definitions and assigned a “rural” or “urban” designation to each United States Postal Service (USPS) zip code in the country. Ambulance providers are required to document the zip code of the point of origin for the ambulance transport. In the Rule, the first 17 miles for ambulance transports originating in a “rural” zip code are paid at a slightly higher rate.

The county based urban-rural distinction was seen as problematic from the beginning and ambulance providers have consistently proposed that a more precise definition of urban-rural geography is necessary to assure that there is reasonable and timely access to emergency healthcare in rural areas. The broad county line distinction often does not reflect ambulance service coverage areas and is neither specific nor sensitive in defining progressively rural areas with decreasing population density and often increasing

²² Federal Register 2/27/2002, Vol. 67, No. 29, Part IV, 42 CFR Parts 410 and 414. *Medicare Program: Fee Schedule for Payment of Ambulance Services and Revisions to the Physician Certification Requirements for Coverage of Non-Emergency Ambulance Services, Final Rule.*

²³ Ibid page 9110

²⁴ Ibid page 9110

geographic barriers to care. There is a general consensus in the ambulance industry that a definition of rural for ambulance payment must be made at a sub-county level.

Recognizing continuing problems in assuring rural EMS coverage, the Medicare, Medicaid, and SCHIP Benefits Improvement Act of 2000 (BIPA) directed GAO to examine rural ambulance costs and make recommendations to CMS on improvements to the Final 2002 Rule “to address appropriate, payment for ambulance services furnished in rural, low-volume areas.”²⁵

The “temporary proxy” has undergone a number of modifications since the 2002 Final Rule with the most recent adjustments occurring in a Final Rule promulgated as required under Section 414 of the 2003 Medicare Prescription Drug, Improvement and Modernization Act.

Nonetheless, EMS reimbursement remains tied to county based geography and with a zip-code based point of pick up to determine if the origin of the service is in an MSA or non-MSA area and there is no current methodology to account on the challenges to provide service in progressively rural areas.

Medicare is the single largest payer for most ambulance providers. Adequate Medicare reimbursement is a key factor in assuring service availability in rural areas. As noted by the GAO, “refining Medicare’s ambulance fee schedule to adequately account for cost differences in providing ambulance services across various geographic areas is important to ensuring beneficiaries’ access to services. Access is a particular concern in rural areas, since providers’ cost per trip is likely to be higher because they provide fewer trips. Moreover, our analysis shows that the cost per trip is likely to be highest in the least densely populated rural counties. While the fee schedule incorporates a rural adjustment to raise payments for trips provided in rural areas, its definition of “rural” is broad. As a result, the fee schedule’s rural payment adjustment does not sufficiently target trips provided in the least densely populated rural counties.”²⁶

The challenge for policy makers is to develop a methodology that can blend the need with the tools available. Both county based borders and zip-code based point of pick-ups, which often cross county boundaries, have inherent weaknesses in defining “rural.”

Targeting Appropriate Ambulance Reimbursement in Rural Areas

In both the 2002 Final Rule and the GAO report there is recognition of a need to develop a methodology that is both sensitive and specific enough to identify “rural” and target additional reimbursement for EMS services in progressively rural and frontier areas. This is necessary to assure that any additional targeted reimbursement be “sufficiently precise to limit the rural bonus payment to only those rural ambulances that are isolated,

²⁵ US General Accounting Office. *AMBULANCE SERVICES: Medicare Payments Can Be Better Targeted to Trips in Less Densely Populated Rural Areas*. GAO-03-986, (Washington, DC: September 2003), p.27.
<http://www.gao.gov/new.items/d03986.pdf>

²⁶ Ibid. page 20

essential, (and) low-volume.”²⁷ CMS further noted in response to the GAO report: “the complexity of the issues and the need for careful analysis to assure that the appropriate payments are made to only those ambulance suppliers/providers who require additional payment because of low volume and not because of some other reason (e.g. inefficiency or competition from another supplier).”²⁸

The GAO ultimately determined that a blend of population density within a landscape is a key factor in defining “rural” but supported the CMS use of county level designation of urban and rural. Their report states, “The difference in the volume of Medicare ambulance trips provided in rural and urban counties largely reflects differences in their population density. Not surprisingly, the number of Medicare ambulance trips in a county is strongly related to its population, with counties with fewer residents having fewer trips. Trip volume is also related to a county’s land area, although to a lesser extent. Population density - the ratio of population to land area - reflects both of these measures.”²⁹

The GAO analysis also “examined several other classification systems: urban influence codes (UIC), which classify counties based on each county’s largest city and its proximity to other areas with large, urban populations; rural-urban continuum codes (RUCC), which classify metropolitan counties by the size of the urban area and non-urban counties by the size of the urban population and proximity to a metropolitan area; and rural-urban commuting areas (RUCA), which classify census tracts using patterns of urbanization, population density, and daily commuting patterns, and then map the census tracts into zip codes. These systems are more complex than the system we used, and we found that they did not help explain variation in trip volume as well as counties grouped by population density.”

In response to comments by provider associations suggesting that county level urban rural distinctions were too broad the GAO noted: “With respect to the geographic unit used to identify trips for the rural adjustment, we agree that, since counties are relatively large geographic units, it is possible for trips in some areas to be overpaid and others underpaid. Moreover, in principle, a rural classification system that uses a smaller geographic unit, such as zip codes, might better target payments to trips in areas with low population density. Yet our analysis indicates that zip codes do not explain variation in trip volume as well as counties. Further, county boundaries tend to be more stable over time than zip code boundaries. In addition, a variety of technical difficulties hinder the use of zip codes for ambulance payments, including the absence of zip codes for some rural areas.”³⁰

The GAO also noted that “with respect to multiple adjustment categories, we did not address whether there should be a single adjustment or whether there should be multiple adjustment amounts to reflect differing levels of population density. A decision on single

²⁷ Federal Register 2/27/2002.

²⁷ Ibid page 9110

²⁸ CMS Correspondence - Administrator Scully to GAO 9/11/2003 as attached to GAO Report.

²⁹ Ibid

³⁰ GAO-03-986, pg. 22

or multiple categories would require balancing increased precision with increased complexity.”³¹

Tools and Troubles

There is universal agreement within the ambulance industry that county boundaries and the MSA/Goldsmith model do not accurately describe rural areas for the provision of ambulance service³² and that current CMS policy does not accurately target rural ambulance payments. There are problems in the use of zip codes as a determinate of ambulance payments. The definition of rural by exclusion – any area outside of a Goldsmith modified MSA – does not address the stratification of need in progressively rural and frontier areas.

To illustrate the problem with using counties as a baseline for defining rural, under current Medicare reimbursement³³ (Goldsmith-modified counties) there are 3,938 urban zip codes with population density less than 150 per square mile. 1,832 of these zip codes serve populations less than 2,500. Similarly, there are 199 rural zip codes with population density greater than 1,000 per square mile. 332 rural zip codes serve populations greater than 25,000, and 15 of these serve a population greater than 50,000.

Using zip codes as a means of identifying rural is also problematic. Zip codes are established by the USPS for the purposes of delivering mail. Zip codes areas are irregular in shape and in population (some zip codes are a single building and others encompass hundreds of square miles).

The main problem with using zip code population density as a rural proxy is that both the numerator and denominator are variable. Should one or the other (square miles or population) be constant it would be easy and logical to compare one area to another. Two variables, though, make it nearly impossible to make comparisons.

Table 1 illustrates the problem of zip code population density by showing how combinations of population and square miles can yield the same result of a density of 150 persons per square mile³⁴.

Table 1					
State	CMS Designation	Zip Code	Square Miles	Population	Density

³¹ Ibid, pg. 22

³² Ibid, pg. 21.

³³ Data source: University of Missouri, Rural Policy Research Institute, <http://www.rupri.org>. There are 42,531 zip codes in the CMS ambulance zip code list on 7/1/2004. For this analysis, the following were subtracted: 9,713 zip codes for post office boxes; 2,661 zip codes whose geography and population was encased and reported within another zip code; 1,195 for which GIS data is not available and 111 zip codes with erroneous population data. 28,851 zip codes were analyzed.

³⁴ Data Source: 2004 Census Bureau ZCTA file.

MN	Rural	55955	15.07	2272	150.72
CA	Rural	93015	123.06	18555	150.78
CT	Urban	06758	2.15	325	151.06
MS	Urban	39465	126.14	18965	150.34

Using a 150 per square mile density approach compared to the CMS zip code list,³⁵ 1,132 zip codes would no longer be rural-eligible although they include zip areas with as few as 10 people (92 zip codes under 500 population). Under this method, 3,938 currently urban zip codes would become rural, 7 with zip code populations exceeding 40,000 (including one with a density of 20).

It is important to note that there is not a universally agreed upon definition of population density in regards to a rural definition. While the example above uses a density of 150, the GAO³⁶ references that the quarter of rural counties that are most densely populated begins with a population density of 52 persons per square mile, but it does not list the density of the most densely populated county in this group.

Problems associated with using zip code as a designation for rural have also been identified by the Office of Technology Assessment.³⁷ Extensive, detailed and regularly updated demographic and other data by zip code is available through the Census Bureau and other agencies.

Congress directed in the Medicare Modernization Act of 2003³⁸ Congress that pharmacy network access be defined using a Department of Defense (DoD) population density method. For pharmacy networks under the MMA using the DoD method, urban is defined as those 5 digit zip codes with a population density greater than 3,000 persons per square mile; suburban between 1,000 and 3,000 densities and rural less than 1,000 densities.

An analysis of the zip code density model designed by the Department of Defense compared to the CMS zip code list³⁹, shows that of the 15,122 currently rural-eligible zip codes, 15,006 would be classified rural, 79 would be suburban and 37 would be urban. This would include 13 urban and 17 suburban zip codes with less than 1,000 population, and 17 zip codes with population exceeding 50,000 – two of which, due to large geography contained in the zip code, have a population density less than 100.

Although zip codes are problematic in pure form they are the only reliable and readily available mechanism to determine the point of origin for an EMS call and CMS has established and formalized their continued use as the key determinate to locate an urban or rural point of pick up.

³⁵ See footnote 15 for a description of the zip code data.

³⁶ GAO-03-986, page 15.

³⁷ Hewitt. Page 17.

³⁸ P.L. 108-173

³⁹ See footnote 15 for a description of the zip code data.

A Way Forward

A sub-county geographic area with a specificity in population can be achieved through joining several existing methods of determining urban and rural continuums. This would allow greater specificity through the use of Census Bureau derived census block and census tract areas.

Urbanized Areas

Urbanized Areas (UA)⁴⁰ were last updated after the 2000 Census. The Census Bureau defines an UA area as “An area consisting of a central place(s) and adjacent territory with a general population density of at least 1,000 people per square mile of land area that together have a minimum residential population of at least 50,000 people.” UAs are based on Census Blocks and Block Groups which are the smaller units that make up Census Tracts (CT). The US Census Bureau attempts to identify CTs as those areas optimally containing exactly 4,000 people⁴¹. While there is some variation of the population within CT, the variation is controlled.

According to Cromartie and Swanson⁴², “Census Tracts are large enough to have acceptable sampling error rates (containing an average of 4,000 people); are consistently defined across the Nation; are usually subdivided as population grows to maintain geographic comparability over time; and can be aggregated to form county [or zip code] level statistical areas when needed.”

In describing the use of UAs as a Congressional definition for the Rural Health Clinic Program, Ricketts⁴³ notes that “it was apparent that both the OMB and Census definitions excluded certain areas which were clearly rural in nature but did not fall under existing definitions of “rural” or “nonmetropolitan”... the solution was to use the Census Bureau definition of “Urbanized Area” ... as the factor for excluding sites for Rural Health Clinic designation. Clinics located outside of “Urbanized Areas” are geographically eligible for RHC designation.” RUCA series 1 is a nearly identical representation of urban as UAs.

ZCTAs

One alternative is to define rural areas by the population density of each zip code directly by obtaining the ZIP Code Tabulation Area (ZCTA) database from the U.S. Census Bureau. ZCTAs are derived from the area and population of each of the 8 million census blocks across the country, and are the most reliable measurement of the population and area of each zip Code. The ZCTA database offers the ability to remove the so called “point zip codes” that represent post office boxes and individual office buildings with

⁴⁰ http://www.census.gov/geo/www/ua/ua_2k.html

⁴¹ Census tract lines are drawn within county boundaries. While they will optimally contain exactly 4,000 people they may contain as few as 1,500 or as many as 8,000 because they follow the easily identifiable physical characteristics of land area. <http://www.census.gov/geo/www/psapage.html>

⁴² Cromartie, John and Linda Swanson, “Census Tracts More Precisely Define Rural Populations and Areas.” Rural Development Perspectives, vol 11, no 3. 1996.

⁴³ Ricketts, page 6.

high mail volume (e.g. Visa, MasterCard, etc.), where no one actually lives. Further, the ZCTA file assigns a zip code equivalent to 100% of the Country.

Rural-Urban Commuting Areas

As noted earlier, the ORHP developed a geographic urban-rural continuum system to define eligibility for many programs administered through ORHP that can be mapped by census tract or zip code. A modified RUCA system is significantly more sensitive in determining “ruralness” than county borders. RUCA areas that are series 1 (1.0 and 1.1) are closely aligned with UAs as noted above.

Table 2⁴⁴ shows an analysis combining zip code files with 1998 RUCA files that identifies a rapid population stratification between RUCA 1 urban zones and all other RUCA areas.

Table 2		
RUCA	Population	Percent
1	178,219,568	65.80%
2	24,021,976	8.90%
3-6	30,817,966	11.40%
7-9	21,994,823	8.10%
10	15,817,179	5.80%
	270,871,512	

While ORHP has designated RUCA series 3 and above as rural, RUCAs areas other than series 1 under a modified system might be considered rural and then tested against UA designated areas and ZCTA files (specificity) to assure the areas were truly geographically time dependent in EMS service availability. This further modification of the RUCA system may be necessary, as there are over 100 series 2 RUCA-based ZIP codes with populations between 25,000 and 80,000 with population densities as high as 4,200 per square mile. [Note: a reclassification funded by ORHP of census blocks and census tracts based on the 2000 Census is currently under underway and will result in a reclassification of zip codes that may resolve this issue.]

Using the current RUCA maps, the Rural Policy Research Institute (RUPRI) performed an extensive spatial analysis of RUCAs to determine that this modification would re-define an additional 6% of the US geography from urban to rural as compared to the MSA/Goldsmith model currently used by CMS. It removes the inherent weaknesses from the MSA county level designation (especially counties classified as MSA when they are adjacent and those affected by Goldsmith). It also leads to a clearly defined urban area, as opposed to “salt and pepper” pockets that occur with a simple population density by ZCTA model.

This approach achieves a unit of measurement that is flexible, precise, stable and more consistent than using county boundaries and yet practical as the RUCA areas are mapped

⁴⁴ ORHP 2004

to zip codes. Ambulance services have been reporting the point of pick up zip code to CMS since April 2002 when the new ambulance fee schedule began implementation. Transition to a payment method based on zip code mapped RUCAs would be transparent on implementation for ambulance services.

Using a combination of data from these three sources a much more accurate urban-rural continuum for EMS is possible. EMS is a service delivered to the user when seconds, not minutes, count. There are inherent weaknesses in each definition set that either excludes areas that should be rural, or include areas that should not be rural. For the purposes of EMS, many suburban locales are more rural than urban because ambulance cost per call is volume dependent. These services tend to serve both suburban and rural residents from one or more bases of operation. There are also a number of isolated places with concentrated population that also serve large geographies. Because ambulance services tend to be organized around populations of people instead of political boundaries, these current definitions are inappropriate.

Tiering Within the Rural Geography

As noted earlier, ambulance services are organized around populations of people and the need to meet appropriate response time goals. In rural areas, populations of people are separated geographically and some areas are more densely populated than others. Because of these factors and supported by the GAO determination is the most useful variable for the purpose of analyzing costs per trip to ambulance volume; costs to provide ambulance service vary from area to area.

The GAO⁴⁵ notes that “trip volume is the key factor affecting differences in ambulance providers’ cost per trip. Ambulance providers’ total costs primarily reflect readiness - the need to have an ambulance and crew available when emergency calls are received. Readiness-related costs are fixed, meaning that they do not increase with the number of trips provided, as long as a provider has excess capacity. As a result, providers that make fewer trips tend to have a higher cost per trip than those that make more trips. We also found that the length of providers’ trips had little effect on their cost per trip. The modest variation in Medicare payments to ambulance providers that serve rural counties probably does not fully reflect their differences in costs because the key factor affecting provider costs—the number of trips—varies widely across rural counties.”

“The number of Medicare ambulance trips provided in rural counties varies markedly with population density, with the least densely populated rural counties tending to have fewer trips than other rural counties. For example, the quarter of rural counties that are the most densely populated, with 52 or more persons per square mile, averaged over 2,200 Medicare trips in 2001. (See table 5.) In contrast, only about 300 Medicare trips, on average, were made in the quarter of rural counties that are the least densely populated, with 11 or fewer persons per square mile. Even fewer Medicare trips - only about 200 - were made in frontier counties, which are counties with 6 or fewer persons

⁴⁵ GAO-03-986, Exec. Summary.

per square mile. This suggests that the cost per trip is likely higher for providers serving the least densely populated rural counties.”

A modified RUCA system is a reasonable method upon which to group locations because it has some natural tiering built into the structure. One potential method of tiering rural areas for the purpose of ambulance reimbursement can be demonstrated by analyzing EMS run data from Minnesota with existing RUCA files.

Minnesota is the only state that could be identified that is currently collecting point of pick up zip code information as part of their statewide EMS data collection system. Minnesota provided 12 consecutive months of data for this analysis. This data includes a set of all transported patients and a separate set for transported patients over age 65⁴⁶.

While this analysis has limitations in that it uses 1998 RUCA designations there is a pronounced difference in volume between RUCA 1 Urban and all other RUCA designations and it may useful in modeling a more appropriate urban rural divide. Under this model RUCA 1 would be deemed “urban” with four additional potential “rural” tiers. The urban zone would not be eligible for a rural modifier and the tiered rural zones would be progressively eligible for increased rural modifiers tied to lower volume and higher costs per trip.

Tier 1: RUCA 2 (High Metropolitan Commuting Area – 30% or more of the commuting flow to Urban Area)

Tier 2: RUCA 3-6 (Low Metropolitan Commuting Area and Large Town Cores, Commuting flows less than 30% large town)

Tier 3: RUCA 7-9 (Small Town Cores, Commuting flows to small towns)

Tier 4: RUCA 10 (Rural Area, No dominate commuting flow)

In the Minnesota data set, there is a striking difference between RUCA series 1 zip codes and RUCA series 2 zip codes. The “run volume opportunity” for ambulance services operating in RUCA 2 zip codes is more similar to RUCAs 3-10 than the Urbanized Areas (RUCA 1).

Minnesota Ambulance Runs					
All Patients Transported in a 12 Month Period					
Zone	Average Runs/10000	Average Runs/10000/Day	Average Square Miles	Total Runs	Average Runs/SqMi
RUCA 1	1477	4.05	3413	189958	55.65
RUCA 2	416	1.14	4746	15056	3.17
RUCA 3-6	399	1.09	9095	33248	3.66
RUCA 7-9	485	1.33	14383	30001	2.09
RUCA 10	468	1.28	42242	37520	0.89

⁴⁶ Data source: Minnesota Emergency Medical Services Regulatory Board. Ambulance run data from April 1, 2003 to March 31, 2004. Minnesota provided two data sets. One set includes all ambulance runs in which a patient was transported. The other set contains ambulance runs for transported patients over age 65. Not all persons over 65 participate in the Medicare program and there are some disabled persons under 65 who are Medicare beneficiaries. Minnesota does not collect payer information.

Minnesota Ambulance Runs
Patients Age 65 or Older Transported in a 12 Month Period

Zone	Average Runs/10000	Average Runs/10000/Day	Average Square Miles	Total Runs	Average Runs/SqMi
RUCA 1	582	1.59	3287	63983	19.47
RUCA 2	129	0.35	4774	4523	0.95
RUCA 3-6	187	0.51	8932	14431	1.62
RUCA 7-9	232	0.64	14220	14107	0.99
RUCA 10	236	0.65	41277	16589	0.40

The ambulance services in these areas are serving a common or like group of citizens. While no two ambulance services may look alike side-by-side, there are enough commonalities within these geographies that the ambulance services tend to more similar than diverse in terms of size, organizational status (paid vs. volunteer), run volume, and costs of service. Likewise, ambulance volume is more similar than diverse within these common geographies.

Summary

There are a number of methods for defining urban and rural in use by the federal government. When applying a definition to the provision of ambulance service, that is appropriate for the manner in which ambulance services are organized, no existing definition leads to a reasonable outcome. A potential modified version of the RUCA definition may be the “best fit” for ambulance services, by defining those areas in RUCA series 1 as urban and all other areas as rural, cross-walked to UA and ZCTA files to assure specificity in geographic and population density need. Likewise, tiers of “rurality” and therefore ambulance volume can be recognized using the RUCA system because of its straightforward approach in defining high and low commuting zones as well as separating geography by population density, large and small towns, and areas with no definable commuting pattern.

This approach is both more sensitive (it uses RUCAs assigned by CT) and more specific (CTs are mapped to zip codes) than a county boundary based method. If this method is adopted, it will require periodic and frequent updates by ORHP and CMS as zip code boundaries change and new codes are added. A similar approach (one using RUCA 1 as an urban definition and grouping the remaining RUCAs into tiers for rural levels⁴⁷) has been adopted by the State of Washington’s Department of Health for the purposes of public health planning.

While CMS is currently collecting point of pickup zip code data on Medicare ambulance runs, neither the GAO nor ORHP have made use of the data. There is general agreement in the EMS provider community that CMS should immediately begin publishing this data, in order to expedite a policy solution for rural EMS reimbursement.

⁴⁷ Washington State Department of Health. p.5.

Once CMS releases its zip code data, it will be possible to further analyze the validity and impact of using a modified, updated RUCA classification to develop rural reimbursement tiers. While the CMS zip code point of pickup files only reference Medicare beneficiaries, and therefore the data set is only a partial reflection of EMS activity, CMS is the single largest payer for most rural EMS providers.

Conclusion

Federal programs that are geared toward ensuring a stable and vibrant EMS system need a better method of defining rural and access that is structured toward this unique combination of access issues. A rural appropriate EMS definition must account for a combination of service availability, population coverage, and a time based geographic delivery of emergency services. To insure the existence of a stable and vibrant EMS system, Federal programs should define and serve rural communities with policies that encourage service availability with optimal response times to emergent events.